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ABSTRACT

A two-phase study examined the utilization of physician assistants (PA's) and nurse practitioners (NP's) in industrial-occupational health care delivery in nine counties in California. Included among the areas addressed during the study were the following: the health and safety needs of industry, ways in which these needs are currently being met, how PA's and NP's can convince industry to use them to provide health care, the components of an industrial health program, and steps involved in planning and implementing an industrial health program. During the first phase of the study, researchers conducted a literature search and interviewed and administered questionnaires to 18 PA's and NP's employed by California industries. This accumulation of data resulted in the development of models for using NP's and PA's in industrial-occupational health care. In the second phase of the study, information generated from phase 1 was integrated into a questionnaire that was administered to representatives of 18 northern California industries. While all 18 respondents said that their industry would consider developing employee health and safety programs, only 11 of them had ever heard of the NP or the PA. It was concluded that NP's and PA's must do a better job of promoting their profession. (The questionnaires are appended.) (MN)

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EXPANDED EMPLOYMENT OPPORTUNITIES FOR CALIFORNIA NURSE PRACTITIONERS AND PHYSICIAN ASSISTANTS

Industrial-Occupational Health Care

Phase I
and
Phase II

An Educational Project Conducted For

Superior California Area Health Education Center
Redding, California

Conducted by

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September - December, 1981
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INTRODUCTION

The Superior California Area Health Education Center is a non-profit organization under contract with the University of California, Davis, Medical School. Our purpose is to improve the distribution, supply, quality utilization, and efficiency of health manpower in our nine-county service area. One of our program goals is to increase the utilization of Physician Assistants (PAs) and Nurse Practitioners (NPs) in this region. To this end, we have developed a study on the utilization of PAs and NPs in industrial-occupational health care delivery. Industry was selected for study as a result of observational findings that suggested limited utilization of NPs and PAs in that area here in California.

We feel that this study will play an important role in the expansion of employment opportunities for California NPs and PAs, as well as increase public awareness toward the functions and contributions of these practitioners.

The goals of this study, then, are to inform the NP and PA about the health and safety needs of industry, and to demonstrate how the utilization of NPs and PAs by industry would be beneficial. Some of the questions that guided this study toward the goals were: 1) What are the health and safety needs of industry? 2) How are these health and safety needs currently being met? 3) How can the NP and PA "sell" industry on the idea of utilizing them to provide health care? 4) What are the components of an industrial health program? 5) What steps are involved in the planning and implementation of an industrial health program? The search for answers to these questions left this writer exhausted. Valuable data was obtained from a literature search, personal interviews, and survey questionnaires. Answers to the above questions are found in this paper under the following topics: NP and PA contributions, cost-effectiveness, quality of care and consumer acceptance; illness and accident rates for California industries; industrial health and safety rules and regulations; industrial health maintenance programs.

The accumulation of data resulted in the development of "models" for the utilization of NPs and PAs in industrial-occupational health. The responses to survey questionnaires were most helpful in developing these models. The questionnaires were sent to hospital employee health practitioners, graduate occupational health nurse practitioners, a correctional institution nurse practitioner, an industrial health education nurse practitioner, and to a PA providing employee health in a large manufactoring industry in Maine. It was hoped that more PAs from California could be included in this survey. As it was, we were unable to develop a roster of PAs practicing in industry in California. This could mean that there are no PAs practicing in this area of health care, or that our survey simply did not find them.

This study should serve as a useful guide for the NP or PA who is considering industry as an employment opportunity. Each section contains information that helps build a strong case for industrial utilization of the NP and PA.

The documented findings contained in this study will be incorporated in an interviewing tool and will be taken to Northern California industries by NPs and PAs. Phase II of this study will assess the health needs of the interviewed industries.

THE NURSE PRACTITIONER AND PHYSICIAN ASSISTANT

Concept and Contributions

Programs across the United States, for more than a decade, have been training and graduating NPs and PAs, also known as health practitioners, mid-level practitioners and physician extenders. Generally, the programs developed in response to a health manpower shortage, especially in the primary care areas of medicine in rural, as well as, inner-city communities.

Just who are these practitioners, and what are their functions? The NP is a Registered Nurse who has received advanced training through either a nursing or medical school. The PA is a graduate of an approved program, generally affiliated with a medical school. The PA has a wide range of medical experience prior to PA training, such as a military medic. Both practitioners learn to take comprehensive medical histories, perform physical examinations, diagnose and manage simple acute and chronic illnesses, initiate emergency medical treatments, counsel patients in health matters and family living. Both NP and PA collaborate with a physician for consultation and supervision, although the degree of supervision often varies.

The NP and PA can be found in greatest numbers in rural and inner-city areas, providing primary care (care to adults, children, families and pregnant women). Recently, PAs and NPs have had opportunities to obtain special training and can be found in relatively small numbers in orthopedic, emergency and surgical practices. PA and NP training programs have likewise expanded their curriculum to include occupational health, especially in programs located east of the Rockies. The typical practice settings include the private physician's office (General Practitioner, Family Practitioner, Pediatrician,OB-GYN specialists), community health clinics, federally-funded health centers and more recently on the premises of the larger industries.[1]

NP and PA utilization studies suggest that California NPs and PAs are filling a gap in health care delivery in physician-poor areas, the rural and inner-city communities. However, this gap has been narrowing. In fact, the Graduate Medical Education National Advisory Council (GMENAC) predicts an oversupply of physicians by 1990.[2] If this prediction materializes it is anticipated that the rural and inner-city areas will be well served by physicians. What does this mean for the NP and PA in California and elsewhere in the nation? GMENAC studied the roles of NPs and PAs as part of its analysis of health manpower needs in the 1990's. Their conclusion was that the future will probably still have a place for the NP and PA providing: 1) they increase the accessability of services, 2) they decrease the cost of expenditures associated with health care delivery, 3) they are the providers of choice for some consumers, and 4) their utilization increases the quality of service. GMENAC continues to look at PA and NP training programs and utilization patterns and until a final report is in, GMENAC has recommended that the present manpower training levels be continued.

The GMENAC report presents a challenge to all PAs and NPs. The prediction of an oversupply of physicians in 1990 means that, first, we must strive to meet the "4-point challenge" mentioned above, and second, we must begin now to

expand employment opportunities.

Quality of Health Care Provided by NPs and PAs.

Perhaps the most important point to be made when addressing industry is that NPs and PAs are effective providers of quality medical care. Numerous studies document that the quality of care provided by NPs and PAs is as good or better than care provided by physicians (most studies compare the quality of care practiced in a primary care setting). 3 4 5 6 The Congressional Budget Report of 1979 states that the conclusions reached in virtually all studies done on the quality of medical care provided by NPs and PAs are similar: "PEs (physician extenders) have performed as well as physicians, with respect to patient outcomes, proper diagnoses, management of "indicator" medical conditions, frequency of patient hospitalization, manner of drug prescription, documentation of medical findings and patient satisfaction." "Indicator" medical conditions in the report refers to "a distinct disease, symptom, state, or injury occurring frequently in primary care with an outcome that can be influenced favorably or negatively by choice of treatment and for which diagnostic and therapeutic procedures are well established."7 These references are a small sample of the quality of care studies done on NPs and PAs.

Consumer Satisfaction.

Consumer satisfaction with health care provided by NPs and PAs has been documented by many studies.8 9 10 11 12 Consumer acceptance and satisfaction, however, appear to be related to consumer awareness of the roles and contributions of NPs and PAs.

Cost-Effectiveness.

Health planners are interested in the effects that the delivery of health care has on the costs to consumers. With the evolution of the NP and PA concepts came an assumption that health care provided by these practitioners would be cost-effective, for several reasons: NPs and PAs cost less to train compared to the cost of training physicians; access, in medically underserved areas, to health care, would be improved because of the emphasis on primary care in PA and NP training programs thus helping to lower the costs of delivery health care; the addition of an NP or PA to a medical practice would increase the numbers of patients seen, presumably increasing the income of the practice, which would allow the physician the option of lowering the costs of health care rendered. Results of studies focusing on these assumptions follow.

Studies on the cost-effectiveness of NPs and PAs usually include a component that compares the costs of NP and PA employment with that of physicians. While a majority of physicians are self-employed, a report by the Congressional Budget Committee states that virtually all NPs and PAs are salaried. The report demonstrates that the hourly earnings of NPs and PAs are about one-fourth the net hourly earnings of an office-based physician. When both NP and PA salaries and MD supervisory costs are considered, the hourly costs of NPs and PAs appear to be about one-third to one-half those of physicians. In 1975, according to the report, PAs and NPs cost $8.00 to $12.00 per hour as compared to $24.00 per hour for physicians.13

One large study demonstrated that practices with NPs or PAs see fifty percent more patients, provide between 64 and 73 percent more direct patient care time, and generate 50 percent larger incomes than those practices without an NP or PA.[14] Trail studied programs for the education of NPs and concluded that the use of primary care nurse practitioners is one way of offering health services to industry employees in a cost-effective manner. "Management is convinced that the 'Medical Care Model' of care is essential to the health of its people. This costly model is directed toward 'illness' rather than 'wellness'. Since Primary Care Practitioners receive training in the prevention of illness, Trail believes health care costs can be reduced. In addition, when the Primary Care Practitioner is introduced in the Occupational Health Care System, "the availability, quantity, and quality of health care can increase."[15] Other studies, of particular interest, conclude that PAs and NPs offer an effective way to deliver quality medical care at less cost.[16] [17] [18] [19]

What impact does the utilization of NPs and PAs have on the cost of medical care for the typical consumer? Unfortunately, a literature search failed to find data documenting consumer savings. What this could mean is: 1) increases in the income of medical practices utilizing NPs and PAs do not get passed on as cost savings to the patients; 2) NPs and PAs are not being utilized effectively; 3) NPs and PAs are prevented from offering health care at lower costs. This last supposition deserves further discussion. Many studies support this contention. One significant barrier appears to have been erected by third party insurance payors, as a result of their health care reimbursement policies.[20] [21] [22] [23]

Industry, however, can often negotiate employee health care benefits through labor union bargaining agreements. Access to medical care might even be improved for employees who participate in industrial health maintenance programs, in particular, preventive health care programs. Because the focus on many industrial health programs is prevention a reasonable assumption would be that the costs for health care to industry, through insurance premiums, and to the employee consumer would be lower. In fact, preventive health care has been documented by many studies as saving industry and its employees costs, in terms of preventing costly care for illnesses and accidents, and reducing lost work days. These studies also demonstrate other benefits as a result of preventive health programs, such as increased worker morale and productivity.[24] [25] [26] What this implicates is that a certain segment of the population, industrial employees, have the opportunity to receive the kind of health care that could ultimately reduce health care costs. Actual expenditures for the delivery of health care will vary depending on the arrangement for delivery made between industry and a provider, and it will depend on who is designated to provide the services. Industry, and its employees, could realize even greater cost savings if they utilized NPs and PAs to deliver health care. This statement is based on earlier documentation of the qualifications of the NP and PA, their ability to deliver preventive health care, and on the findings that NPs and PAs salary is much less than physicians when they provide the same services.

This section has demonstrated that quality medical care is being provided by NPs and PAs, that consumer acceptance is high, and that the potential exists for lowering health care costs by effective utilization of NPs and PAs. Industry benefits from employee health programs and could benefit from the utilization of NPs and PAs.

LAWS AND REGULATIONS GOVERNING OCCUPATIONAL SAFETY AND HEALTH

Industries must comply with specific state and federal safety and health regulations. As a prospective provider of industrial health care, the NP and PA will need to know about these regulations.

Federal Occupational Safety and Health Act, 1970.

California is one of several states which has developed and which administers, its own occupational safety and health program, according to the guidelines and provisions of the Federal Occupational Safety and Health Act of 1970. The OSHA Act permits a state to manage its own program if it meets certain federal requirements regarding the program's structure and operations.[27]

CAL/OSHA.

The California Occupational Safety and Health Act (CAL/OSHA) was enacted in 1973 to ensure California workers a safe and healthful working environment. The California Department of Industrial Relations administers the CAL/OSHA Program. The California program is approved by Federal OSHA and is monitored by, and receives part of its funding from OSHA. The Division of Occupational Safety and Health, within the Department of Industrial Relations, has the authority to enforce all laws, standards, and orders protecting worker safety and health on the job.[28]

CAL/OSHA covers nearly all workers in the state, excluding federal employees. Compliance with occupational safety and health standards, rules, regulations, and orders are ideally done voluntarily and at the initiative of the employer.[29]

The National Institute for Occupational Safety and Health (NIOSH), created under the Federal Occupational Safety and Health Act of 1970, develops and conducts research pertinent to safety and health and recommends standards, or criteria documents, which are then forwarded to OSHA. NIOSH sets forth health and safety guides for virtually all types of industries. These guidelines are published for specific industries in individual booklets by the U.S. Department of Health, Education, and Welfare, Center for Disease Control, NIOSH. University and industrial libraries are replete with such information.

UNDERSTANDING THE NEEDS FOR HEALTH MAINTENANCE, ILLNESS AND ACCIDENT PREVENTION IN INDUSTRY

Occupational Illnesses and Injuries in California Industries.

The following information is taken directly from the California Department of Industrial Relations, "Occupational Injuries and Illnesses Survey, California, 1979."

Occupational injuries and illnesses occurred at a rate of 10.7 for each 100 full-time workers in California during 1979. An estimated 881,000 workers in private industry and State and local government agencies sustained job-related injuries and illnesses in 1979, which was 50,200 higher than the previous year's toll. The rise in the number of injury and illness cases was nearly proportionate to the increase in the number of Californians at work and their hours on the job.

California's work force has expanded each year since 1975. The largest year-to-year employment increase on record occurred in 1978. Each year as new workers, many of them young or inexperienced, were added to payrolls, the number of work-connected injuries and illnesses climbed, outpacing employment gains.

The overall incidence rate of 10.7 per 100 full-time workers during 1979 translates in terms of exposure on the job to one occupational injury or illness for every 18,800 hours worked. Other key survey findings were: 1) The all-industry rate for lost workday cases, those involving either absence from work or the inability to perform regularly assigned duties, increased from 5.0 in 1978 to 5.1 in 1979. 2) Of the 881,000 job-related injuries and illnesses registered in 1979, 97 percent were occupational injuries and 3 percent were occupational illnesses. Forty eight percent of the injuries resulted in time away from work or in the worker's inability to perform normally assigned duties. In contrast, 42½ percent of the occupational illnesses caused either lost time or restriction of the worker's ability to engage in normal work activities.

Lost workday cases occuring at a rate of 5.1 resulted in the loss of an estimated 6.2 million workdays, equivalent to a full year's work for about 24,700 Californians. The incidence rate for cases with no loss of work-time but requiring medical treatment beyond first aid was 5.5. Cases without lost workdays accounted for about 52 percent of total occupational injuries and illnesses recorded in 1979.

In 1979, over 90 percent of all work time lost due to on-the-job injury or illness in California involved at least one day's absence from work while the remaining 10 percent consisted of restricted work activity. Agriculture, forestry, and fishing posted the highest incidence rate for occupational illnesses among major segments of the private sector, (0.6 per 100 full-time workers). Several 3-or-4 digit industries recorded occupational illness rates many times the all-industry average of 0.3 illnesses per 100 full-time workers. Among the industries with rates above 1.5 (5 times the all-industry rate) were miscellaneous chemical products; pressed or blown glass or glassware, and public order and safety (police protection, fire protection, and correctional employees) -- both at the State and local levels. Additional industries with rates four times

the all-industry average (1.2 or above) included meat products, frozen fruits and vegetables, miscellaneous nonmetallic mineral products, metal coating and allied services, electron tubes, local government job training programs, and local government environmental quality and housing activities.

To avoid confusion as to what constitutes an occupational illness and injury, the California Department of Industrial Relations defines these for us: "Occupational illness" is defined as any abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to environmental factors associated with employment. It includes acute and chronic illnesses or diseases which may be caused by inhalation, absorption, ingestion, or direct contact, and which include the following: occupational dermatitis, dust diseases of the lungs (pneumoconoises), respiratory conditions due to toxic agents, poisoning, disorders due to physical agents (heatstroke, frostbite, effects of radiation, etc.), disorders associated with repeated trauma, and "all other" occupational diseases, such as anthrax, infectious hepatitis, etc. "Occupational injury" is defined as any injury such as a cut, fracture, sprain, amputation, etc., which results from a work accident or from exposure in the work environment.[30]

Disabling Work Injuries and Illnesses Under Workers' Compensation for Northern California Industries, 1979.

Strains and sprains were the leading nature of injury in 1979. These kinds of injuries occurred most often to the back and spine. Cuts ranked second, with most cuts involving the upper extremities. Among occupational illnesses, the leading category was dermatitis, followed by systemic poisoning.[31]

Among the major occupational groups, nontransport operatives (asbestos workers, assemblers, dry wall installers, garage workers and gas station attendants, to name a few) sustained the largest number of disabling work injuries and illnesses. Craftsmen and kindred workers (bakers, carpet installers, electricians, etc.,) ranked second. Two types of accidents, "struck by" and "overexertion", accounted for over half the injuries for the two groups.[32]

Nearly 20 percent of the disabling work injuries and illnesses were incurred by workers from 20 to 24 years old, and nearly 17 percent by those from 25-29 years. These same age groups also had the largest number of injuries and illnesses in the sales, clerical, craftsmen, non-productive transport, non-farm laborers, farm workers, and service worker categories. For all other occupational groups, except private household workers, the 25-29 year old group ranked first, while the 20-24 year old group ranked third.[33] This data confirms the need for programs in employee safety and health!

It is now interesting to know the illness and accident rates for individual California counties. The top three counties, with the highest accident and illness rates, are: Los Angeles County, first; Orange County, second; and, Alameda County, third.[34] Now, let's examine the 9 county area in the Superior California Area's Health Education Center region. The region is made up of the following counties:

1. Butte
2. Glenn

3. Lassen
4. Modoc
5. Plumas
6. Shasta
7. Siskiyou
8. Tehama
9. Trinity

The Table on the following page will provide the reader with insight on the illness and accident rates for these 9 counties. It would be helpful for any NP or PA seeking a position with industry in any one of these 9 counties, to research the illness and injury rates for a particular industry. This information, along with needs expressed by the industry, can guide the development of beneficial health programs.

Industry's Approach To Meeting It's Health and Safety Needs.

Health and safety provisions are often developed, in the private sector, through collective bargaining agreements between industry and labor unions.[35] Health and safety clauses in these agreements, or contracts, provide one indicator of union and management involvement.

A study was done by the Division of Labor Statistics and Research, California Industrial Relations, on collective bargaining agreements that were in effect during 1978 or later. These contracts covered 981,280 California workers in the private sector. Six-hundred and thirty-five collective bargaining agreements were analyzed on the basis of 26 items, provisions that have been traditionally contained in collective bargaining agreements. The 26 items are:

1. General policy statement
2. Compliance provision
3. Protective gear or devices (counted only if a general statement and no specific provision)*
4. Adequate lighting
5. Eye and face protection
6. Protection from noxious gases or dust
7. Hearing protection
8. Protective clothing
9. Gloves
10. Safety shoes
11. Falls
12. Falling objects
13. Guards and safety devices on machinery
14. Protection from electrical hazards
15. Radiation
16. Fire protection
17. Safety rules
18. Employee health services
19. Studies and research
20. Information, collection and exchange
21. Discriminatory action against an employee
22. Right to refuse unsafe work or equipment
23. Safety committee
24. Safety inspection
25. First aid
26. Safety training
27. Workplace monitoring devices

*If only a general statement regarding protective gear or devices was made, Item 3 was tallied. If a specific provision regarding protective gear or devices appeared, Items 4 through 10, each, was counted separately and no tally was made under Item 3. Consequently, although 27 items are listed, the maximum number of provisions that would be tallied was 26.[37]

Table 1

Disabling Work Injuries and Illnesses Under Workers' Compensation, California. County of Occurrence by Industry July - September, 1979[36]

County of Occurrence	Fatal	Total	Private Sector: Agriculture	Mining	Construction	Manufacturing	Trans* Comm.* Util.*	Wholesale Trade	Retail Trade	Finance, Insurance and Real Estate	Service	State and Local Government	Industry NOT stated
California: All County TOTAL	155	100,021	4,998	731	9,744	28,334	6,440	6,034	15,055	1,623	12,556	14,496	10
*Population 1979													
Butte - *137,700	1	601	58	--	72	193	10	18	88	12	60	90	--
Glenn - *21,300	--	130	26	6	14	58	2	10	4	--	2	8	--
Plumas - *16,800	1	133	6	4	20	77	--	2	10	--	2	12	--
Lassen - *21,300	2	108	8	--	8	47	2	2	2	--	8	31	--
Modoc - *9,000	--	40	12	--	4	14	2	--	--	--	4	4	--
Shasta - *113,200	3	473	7	2	80	99	37	34	72	2	62	78	--
Siskiyou - *39,700	1	177	14	--	10	107	4	--	16	--	8	18	--
Tehama - *37,100	1	163	8	--	8	66	4	8	30	--	10	29	--
Trinity - *12,500	--	74	--	2	6	40	8	--	--	2	4	12	--

*Trans=transportation
*Comm=communication
*Util=utilities

The number of these items found in each contract was tallied. Results were: 20 percent of the contracts did not have any safety or health provisions; nearly 54 percent of the contracts contained 1 to 5 provisions; 22 percent contained 6-10 provisions; and nearly 4 percent contained 11 or more provisions. The study's authors conclude that "coverage of safety and health clauses in agreements appears to bear some relation to the injury or illness experience of the industry." In assessing the health and safety needs of specific industries, it is important to know what clauses are included in collective bargaining agreements.

Included in this same study was an examination of specific health and safety provisions under 12 major topics. The following Table, containing the topics and results, is taken directly from the study.

Safety and Health Provisions in Private Sector Union Agreements, By Subject Covered California, 1978-1980[39]

Subject of Provision	Contracts		Workers Covered	
	Number	Percent of Total	Number	Percent of Total
Total	635	100	981,280	100
General policy statements	327	51	498,120	51
Mandating compliance with safety and health laws	224	35	446,040	45
Protective gear, devices, or practices	362	57	654,070	67
Requiring worker compliance or responsibilities	206	32	367,190	37
Right to refuse unsafe work or equipment	178	28	419,090	43
Safety committee provisions	208	32	259,010	26
Safety inspections	88	14	150,270	15
Information: collection and exchange	115	18	243,810	25
Medical Surveillance	53	8	96,690	10
First aid and health care personnel	54	9	60,000	6
First aid provisions	125	20	208,590	21
Safety and health training	59	9	103,020	10

Note: Figures are nonadditive.

The reader should not have much difficulty perceiving the low priority that many industries have for provisions specifically dealing with health and safety such as: medical surveillance, health care personnel, and health and safety programs in general. Why industry holds this attitude needs to be explored. It is also interesting to note that in the 635 contracts that were studied, less than half had provisions requiring compliance to various governmental occupational safety and health regulations.

The results of the above study, when compared to the results of illnesses and accident rates for California industries, lends further support for the need of industrial safety and health programs. Such documentation could motivate industries to develope industrial health programs.

MEETING THE HEALTH AND SAFETY NEEDS OF INDUSTRY

Industrial Health Maintenance Services.

It is clear from the information presented thus far that industrial illness and accident rates need to improve. The intent of this section is to present an overview of the basic elements found in many industrial health programs. Later on, the benefits of each element will be presented.

Work related illnesses and injuries are costly to industrial management in terms of production outcome and health insurance premiums. However, maintaining a healthy work force means more than just providing a safe and healthful work environment. As Metcalf says, "the loss to business from on-the-job injuries and illnesses is minor in comparison to the loss from disabling not related to the job...workers' compensation insurance does not cover the staggering losses to business caused by this kind of absenteeism."[40] Metcalf believes that preventive health care will promote a healthy work force.

What are health maintenance services? They are services provided by industries and business establishments to help maintain the health of their workers. Particular emphasis is placed on prevention of illness and injury. Before expanding on these services, it is important to state what they are not. The services are not meant to be a substitute for voluntary prepayment plans such as Blue Cross, Blue Shield, or Group Hospitalization. Such voluntary plans, according to Metcalf, make provisions for the cure of the sick, while health maintenance services emphasize the prevention of sickness and disability. "Sound health insurance plans should supplement the benefits afforded by health maintenance plans."[41]

The extent of health maintenance services available to workers may vary depending on the number of employees, the geographic location of the industry, and its particular health and safety hazards. Nonetheless, four basic elements of health maintenance services have been identified. They include: 1) preplacement physical examinations, 2) periodic individual health appraisals, 3) care of minor ailments and occupational disabilities, and 4) other preventive services, including health education and personal health counseling.[42]

The employer and employee should understand that the provision of health maintenance services does not mean the disruption of the personal realtionship between the employee-patient and his private physician. The physician should be an integral part of the overall plan for maintaining the employee's good health.

Providers of Industrial Health Care.

Physicians. Many industries contract with private physicians in the surrounding community to provide employee health care. Some of the larger industries employ a physician who then functions on the premises. Still other industries are presented with a panel of community physicians who are interested in providing industrial health care.

The circumstances for Butte County industries, (small in number of em-

ployees compared to most industries in southern California) may be typical for other northern California industries. A panel of physicians was organized in Butte County, consisting of physicians who indicated a desire to offer medical care to industrial workers. When medical care is desired or needed, the industries send the workers to one of the panel physicians, or to the nearest hospital emergency room. Workers are sent to the physician's private medical office for such things as pre-employment physical examinations, work injuries and occupational illnesses. According to one Butte County panel physician, no contracts exist between the panel of physicians and the industries.[43] The physicians charge for their services and receive reimbursement from health insurers and workers' compensation according to the insurers payment schedules. Whether these physicians accept the insurers payment as payment in-full is not known. The panel physician estimated that 50 percent of the workers needing medical care are sent to private (panel) physicians offices, and 50 percent are sent by industry directly to hospital emergency rooms, not always for true emergencies. What this arrangement, indiscriminate use of emergency rooms by industry, does to the industry's health care costs is not difficult to imagine. The panel physician surmised that this use of the emergency rooms might be due to the lack of understanding by industry of health care costs, and how costs for physicians office visits compares to hospital emergency room costs.

Occupational Health Nurses (R.N.'s). Many of the larger industries employ an R.N., specially trained in occupational health, who provides nursing services on the premises. Functions typically include health and safety educational programs; blood pressure, hearing and vision screening; and first aid. Many will take occupational health histories as part of a pre-employment examination. The actual physical examinations, diagnosis and treatment of occupational injuries and illnesses are done by designated physicians.

Nurse Practitioners and Physician's Assistants. While no statistics were found on the numbers of NPs and PAs involved in industrial-occupational health, it is generally thought that the numbers are realtively few, compared to the numbers practicing in physicians' offices, clinics and hospitals. NP and PA training programs prepare these practitioners to deliver primary care, take comprehensive histories, perform physical examinations, and diagnose and treat common acute and simple medical problems. In addition these practitioners receive training in health promotion and disease prevention which includes health education and counseling. The one area that may need extra study involves toxicology: diagnosing and treating injuries and illnesses resulting from environmental hazards in the work place (chemicals, toxic gases, etc.). California laws permit NPs to contract with a business or industry for health care services.[44] Physician supervision can be either direct or indirect, meaning that a physician does not have to be on industry's premises. Physician supervision may consist of a contractual agreement with an NP or PA for consultation, periodic medical chart reviews, etc.

First Aid Worker. The smaller industries may train a worker in first aid. This worker would then refer anything other than common first aid problems to a designated provider, usually a physician.

Cost-Effective, Comprehensive Employee Health Maintenance Programs.

Health maintenance and disease prevention programs benefit the industry and employees in many ways. When thinking of benefits, the employer should consider the loss he is suffering daily from interrupted production due to sickness and accidents, the cost of replacing an employee, decreasing efficiency, delayed deliveries, canceled orders, loss of customer goodwill, and lowered employee morale.[45]

Metcalf cites a study conducted at the University of Michigan for the U.S. Public Health Service. Costs of workers' compensation claims were compared in companies that had employee health services with those companies that did not have such programs. "In every industrial category, claims were significantly greater per payroll dollar in the firms where occupational health services were not available."[46] Other studies document the value and benefits of employee health maintenance programs from the industries' perspective.[47] [48] [49]

The following paragraphs will describe programs in health promotion and disease prevention, and will focus on the cost-benefits to industries utilizing these programs. The four basic components of an industrial health program (preplacement physical examinations, periodic individual health appraisals, care of minor ailments and occupational disabilities, and other preventive services as health education and counseling) will be discussed first. The rationale behind each component was considered important, so this has been included.

Preplacement physical examination. Physical examination of an applicant before he is put to work, or of an employee before he is transferred to a different job, is fundamental to health maintenance. It helps to assign the worker properly. The preplacement examination is not designed to exclude applicants who are not physically fit. If a person is found to have a "bad back", it would be both harmful to him and poor policy for the industry to require him to do much lifting or other work that may aggravate the condition. Furthermore, the information provided by a preplacement examination may be of considerable value in the event of a subsequent claim under the workers' compensation laws.[50]

Of course, the preplacement examination includes a comprehensive medical history. Data from the history provides the employee the assurance that someone knows of pre-existing conditions. The history also provides insight into the predispositions for individual employees to medical illnesses. Thus, the employee can be placed in an appropriate work climate.

Periodic Health Appraisals. The periodic health appraisal is another type of physical examination used in health maintenance. It is done at intervals to detect illness early and to stimulate the employee to take appropriate measures to maintain his health. Periodic health appraisals are advisable if workers are to be kept productive. They provide current health inventories for the industry and contribute to the discovery of disease in its early stages. In this way, the industry and the employee are helped to realize his highest potential. According to Metcalf,[51] each employee represents an average investment exceeding $3,000 and is much higher for specially trained personnel and executives. Estimates are predicted to be much higher at this date. Industry

must consider protecting this investment.

Care of Minor Ailments and Occupational Disabilities. Treatment on the premises for minor ailments helps to keep workers on the job. Consultation with the worker's private physician is important in order to provide appropriate care. Where on-site health services are not available, the worker usually reports to the physician or another designated provider. The benefits to the industry and employee in having on-site health care will be discussed further, later in this paper.

Health Education and Counseling. Health education and counseling are two of the more important phases of the health maintenance program. Many such programs are arranged for by releasing employees at specific times. The employees are thus paid to attend the programs. Various studies document the attitudes that the costs for the programs are more than justified. Some of these studies will be mentioned later. These programs, however, should be voluntary. Strasser[52] says that any attempts to make such a program mandatory would result in opposition and be self-defeating. Health education and counseling programs vary. Those programs that have been studied for beneficial effects will be discussed in the following paragraphs.

ALCOHOL AWARENESS. The information contained in the following paragraphs is directly quoted from a report to the U.S. Congress in 1978, on alcohol and health.[53] The report identifies alcohol as a leading cause of illness and accidents. Problem drinking and alcoholism exists in great numbers among the U.S. workforce, causing industries ever-increasing costs due to loss of production and services, increasing health and accident insurance premium payments, and low worker morale.

The report states that there are an estimated 9.3 to 10 million problem drinkers (including alcoholics) in the adult population. It is estimated that alcohol-related deaths may run as high as 205,000 per year (11 percent of the 1.9 million deaths in 1975). In fact, clinical studies consistently show that various types of alcohol problems in males are associated with mortality rates two to six times higher than rates in the general population.

Alcohol abuse and alcoholism cost the United States nearly $43 billion in 1975--including $19.64 billion in lost production $12.74 billion in health and medical costs, $5.14 billion in motor vehicle accidents, $2.86 billion in violent crimes, $1.9 billion in social responses, and $0.43 billion in fire losses.

Occupational accidents affect a substantial portion of the population. One researcher reports union estimates of an annual toll of 18,000 deaths and 10 million injuries resulting from industrial accidents. Up to 47 percent of nonfatal industrial accidents and up to 40 percent of fatal industrial accidents are alcohol related. Experimantal evidence has shown that alcohol inhibits coordination and judgment, lengthens reaction time, and decreases motor performance and sensory skill in simulated industrial work. Studies show that problem drinkers are as much as three times more likely to be involved in industrial accidents than the general population.

The largest economic costs of alcohol abuse and alcoholism, $19.64 billion in 1975, involved lost production of goods and services. This estimate includes three components: lost market production among male workers--$15.46 billion; lost military production--$0.41 billion; and lost future production from excess mortality in 1975--$3.77 billion. The $15.46 billion estimate of lower earnings resulting from alcohol-related problems is extremely conservative, because losses incurred by working women with alcohol problems and by workers younger than 21 or older than 59 were not included. In addition, the cost of transfer payments, such as unemployment compensation or welfare benefits, is excluded from the estimate. Not only does alcohol abuse adversely affect industry's production, abuse carries health risks for the worker.

In a study that evaluated industrial alcoholism programs, Schramm[54] states that alcoholism programs in industries have increased since the 1960's largely as a result of a campaign by the National Council on Alcoholism to persuade industries that an employee treatment program would pay for itself by restoring alcoholic workers to prior levels of productivity. He cites studies which use implicit economic measures from which conclusions can be drawn regarding the economic implications of the particular alcoholic programs. Schramm cites a study by Dunne[55] of the New York City Police Department's alcoholism counseling program. Dunne found that officers who completed treatment had a 50 percent reduction in the number of absences, and that 70 percent returned to full duty. In their review of 278 oil company employees in 18 states, 8 years after treatment, Thorpe and Perret[56] found that 47 percent were abstinent, 20 percent were unimproved, 14 percent had been dismissed and 19 percent were retired or dead. Asma, et.al.[57] reported on 402 employees in a midwestern telephone company's alcoholism program. Five years after treatment, the level of absenteeism was about one half that of the 5 years before treatment, and job efficiency, as evaluated by supervisors, had increased remarkably (58 percent of the workers being rated as "good" 5 years after treatment, compared to 22 percent before.)

Employee alcoholism programs appear to be cost-effective. Further support of this assumption appears in an evaluative study conducted for the Navy. The study revealed that its treatment program, based on an occupational identification model, was substantially cost-effective. The researchers suggested that these savings could be enhanced further by efforts at earlier identification.

A research project that involved data collection from fifteen private organizations with alcoholism programs underlined the positive impact of the programs on their clients. A second phase of this study indicated that employers' investments in such programs would result in cost-savings. A survey of alcohol and drug abuse programs in the railroad industry likewise indicated rehabilitation rates averaging 69 percent.[58]

Employee alcohol awareness programs vary in course content. According to 1978 report to the U.S. Congress, five general areas in which most alcohol programs fall include: chronic illness or disability and early mortality; acute health problems related to a specific drinking incident; injuries, homicides, suicides, and property loss during and after drinking; nonfulfillment of major social roles, notably those affecting family and jobs; and mental problems

related to drinking."[59]

DRUG AWARENESS. A drug awareness program can be easily incorporated into other programs involving health education. It easily fits into a program of alcohol awareness, for example. According to the report to the U.S. Congress, combined use of alcohol with other drugs abounds, despite the known ill effects of such combinations. During the last three decades, Americans have increased their use of all types of drugs--prescription, over-the-counter, and illicit. Research results show that combined use of alcohol and drugs can both increase physiologic danger and cause substantial behavioral change. In this same report researchers have found that drinkers are especially likely to use psychoactive substances non-medically. Among adults who have used marijuana, more than one-fourth have combined it with alcohol; similarly, one-fifth of all cocaine users have combined its use with alcohol.[60]

Nationally, alcohol in combination with other drugs is the second most frequent cause of drug-related medical crises. The minor tranquilizers are the drugs most frequently combined with alcohol and can increase the deleterious effects of alcohol on performance skills and alertness. Furthermore, alcohol in combination with certain drugs can produce depressed cardiac functioning.[61]

Industry should be interested in knowing that drug use is not limited to "off-duty" hours. Employees not only risk their health but their lives when unsupervised use of medically prescribed drugs (medications) are used. Education on proper use and side effects of prescription drugs is important. Although statistical data relating work injuries to prescription drug use have not been documented by this writer, it would be reasonable to assume that a certain percentage of industrial accidents are directly related to the lack of prescription taking understanding and/or to indiscriminate use of prescribed drugs.

Health Counseling. Health counseling is an important component of industrial health maintenance programs. Counseling programs include group or individual participation. A group of employees with specific health problems, such as diabetes or hypertension, can gather for periodic monitoring. Urine clinitests or blood pressure readings can be taken. Medication dosages and the frequency of these dosages can be reviewed. Other counseling components could include reviewing life styles, nutrition and exercise patterns, all of which may have a bearing on the health status for these workers. Another group of employees might consist of those at risk of developing ill health or disabilities. Those workers who are overweight, who smoke, who are exposed to toxic chemicals or gases, and those who are involved in stressful decision making on a daily basis are some of the workers who could be included.

Health counseling should be available on an individual basis as well. Personal problems involving work relationships, family and marriage might be better dealt with on a one-to-one basis.

Metcalf[62] notes that "top executives of many firms have stated that they believe this function (personal health counseling) to be the most valuable part of their health maintenance programs." Metcalf also cited actual stories of

how health counseling led to the solution of individual problems, thereby restoring and increasing productivity in the companies where these employees work.

It is sometimes difficult to categorize a program as either health education or health counseling. The two often fit well together. If you need to categorize, however, you might think of health education programs as those geared toward the prevention of disease or disability, and health counseling programs as those geared toward dealing with existing health or disability problems where the focus of the programs is on maintaining wellness and preventing circumstances that could aggravate or worsen an illness or disability.

In summary, it would be difficult to measure the full value of occupational health services to employers or employees. Metcalf[63] expresses this when he says, "a program may show a reduction in workmen's compensation rates or in days lost from illness or injury, but it cannot translate into dollars such items as reduced employee turnover, increased production due to better physical and mental health, or savings resulting from the early detection of disease through physical examinations."

The preceding paragraphs have reviewed the four basic components of an industrial health maintenance program. The following paragraphs will review another component which is gaining much attention as a valuable addition to employee health maintenance programs.

Physical Fitness Programs.

A well-organized exercise program, easily accessible to employees, can have many direct and indirect effects on health habits and behavior. In a study conducted by Rhodes and Dunwoody,[64] an experimental group of male industrial employees participated in a physical fitness program of six months duration. Pre-tests and post-tests, given to both the experimental and control group, included the following parameters: 1) Cardiorespiratory tests 2) pulmonary function tests 3) body height, weight, and skin-fold measurements 4) flexibility tests, and 5) strength (hand grip). At the end of the six month exercise program the following findings were statistically significant: 1) body weight significantly decreased for the exercise group; 2) decreased pulse rate was noted for the exercise group; 3) vital capacity and maximal breathing capacity improved significantly in the exercise group; 4) flexibility (trunk flexion) improved. The percentage of body fat and strength of handgrip showed little or no change.

The exercise group responded to a questionnaire on the psychological benefits and attitudinal changes at the end of the six month program. Several improvements were indicated by the subjects which definately could enhance job performance and be of special interest to employers. First, the ability to work harder physically was found to be true in 90 percent of the subjects. Second, 63 percent had an increased ability to handle job tensions and related stress. Third, the subjects indicated an increased ability to concentrate. Other "benefits" that were established were an improved outlook on the job and an increased level of self-confidence, as compared to pre-exercise feelings.

The Rhodes and Dunwoody study cite many other studies that have revealed benefits of physical fitness programs. These studies have shown that participants have developed improved self-perceptions of their health status, and feelings of being more efficient and productive in regards to workload and time schedule greatly increases.[65] [66]

Physical fitness not only promotes a vigorous workforce, but many studies demonstrate the value of physical activity as a means of combating many of our present health hazards such as obesity, hypertension, heart disease, high blood cholesterol levels, and stress.[67] [68] [69] In other words, physical fitness not only helps promote good health, but it can also act to prevent certain illnesses. Health promotion and disease prevention will ultimately decrease industrial accident and illness rates, which will decrease workers' compensation claims and lower the costs for health insurance paid by industry.

The information presented in this section demonstrates the many benefits, to industry and its employees, of a well-organized physical-fitness program. The NP or PA can use studies, such as those mentioned in this section, to substantiate such benefits. Program planning and implementation will be directed by such factors as industry size, type of industry, plant layout, and room space available. Costs for the development and continuation of such a program will also vary. A physical fitness gym will be more expensive than instructor-led programs in such things as aerobic exercise and muscle-toning or other such programs.

SUGGESTED METHODS FOR REDUCING INDUSTRIAL HEALTH CARE COSTS

Based on the literature reviewed thus far, industry can reduce employee health care costs in the following ways:

1. Contract with Nurse Practitioners or Physician's Assistants for employee health care. Physicians supervision costs added to the cost of an NP or PA have shown to be less than comparable care afforded by physicians alone. And, as mentioned earlier, many physicians do not charge the patient less for care rendered by NPs and PAs.* Thus, by contracting with NPs and PAs, the opportunity for health care at lower costs is present.

A contract between industry and an NP or PA would ideally include a comprehensive health maintenance program, or would specify desired programs. Included in the contract should be a health care delivery time-schedule: where the services are to be provided and how often; provisions for emergency medical care and physician referral patterns. A contract will include costs for the programs. Industry could negotiate these costs with the provider of the services or with its labor union and the provider.

The NP or PA could then contract with a physician for consultation or backup services. The degree of supervision will depend on where the NP or PA is employed. Different states have different requirements. Most states do not require the direct (on-site) supervision of an NP or PA by an M.D.

2. Develop a comprehensive employee health maintenance program to include: preplacement histories and physical examinations, periodic health appraisals, care for minor ailments and occupational injuries, health education and health counseling, and physical fitness.

3. Provision of health maintenance services on the premises of the industry will save costs providing space, and basic medical equipment is already available. Industries with on-premisehealth services are more likely to have greater numbers of employees participating in these services. Follow-up health care, health education and counseling programs are strengthened when they are close to the employees.

If space and equipment are not available, having the services brought to the industry (provider comes with necessary equipment and other items necessary for the programs) can be less costly than sending employees to the emergency rooms for non-emergencies, or sending employees across town to a private physician's office.

The point in making services accessible to employees is to prevent unnecessary time away from work (travel time to and from appointments), to be at the forefront in preventing illnesses and injuries, and to decrease the general financial outlay for employee health care costs.

The reader will now be made aware of other methods that can reduce industrial health care costs. Because programs in health promotion and disease prevention are not usually covered by health insurance, industry will have to

decide for itself whether the benefits of such programs outweigh the costs. This is where documented studies that point to the benefits helps out. If industry decides that the investment in employee health is worth the costs, they can negotiate with the provider of the health maintenance services, and/or negotiate with their union for inclusion of all or some of the programs in the employees health benefit package. An industry might even consider becoming self-insured. Several recent studies on occupational health care costs suggest that industries may benefit by becoming self-insured. By doing so, costs for medical coverage could be reduced. In addition, an incentive would exist for more comprehensive programs; a program sponsored by the industry for the industry and its employees.[70] [71] [72]

Goldbeck[73] says that management and labor must work more cooperatively to achieve employee health benefit plans that emphasize health and cost-effectiveness, and are employee-oriented rather than provider-oriented. He sees some of the trends in corporate health care being: more companies becoming self-funded to reduce costs (without reducing benefits); expanding corporate clinics and other forms of direct provision of care. Reimbursement will be designed to provide incentives for preventive care and the utilization of "allied" health professionals. Specialized programs will focus on health education concerning lifestyle (smoking cessation, stress management, etc.). Mental health benefits, he says, improve employee morale, lower absenteeism, reduce instances of mental illnesses, improve productivity, and reduce both hospital use and insurance premiums.

Legislation continues to deal with the problems of health care costs, and will continue to work on the health care services known to save costs (preventive medicine), by correcting the restrictions on the reimbursement of these services by third party payors.

The next section consists of models of NP and PA utilization in industrial-occupational health care. These models developed from the survey questionnaires sent to NPs and PAs, and from additional information obtained from articles and research studies. These articles and studies will be referred to in the following pages. Results of the survey questionnaires will be presented as well.

MODELS FOR THE UTILIZATION
OF NURSE PRACTITIONERS AND PHYSICIAN ASSISTANTS IN INDUSTRY

This paper has focused on federal and state Occupational Safety and Health regulations; California industrial illness and accident rates; industrial health care needs; the role of the NP and PA and how these practitioners can meet the health care needs of industry.

Four basic components of industrial health maintenance programs were identified and discussed. It was pointed out, however, that health care needs will vary from one industry to another depending on the type of industry, numbers of employees, and the particular health and safety hazards experienced by the individual industries. Hospitals, for example, have different needs for employee health and safety than does the construction industry. Programs will have to be tailored to the specific needs of the industry. This is not to suggest that the four basic components will be inappropriate for certain industries. These components are basic to any industrial health care program. The programs that vary are usually found under the categories of employee health and safety education.

Hospital employee health practitioners, the majority being nurse practitioners, make up the largest group of industrial practitioners in California (according to this study). Because of this large group, special emphasis will be placed on the particular needs of hospital employees for health care, and on programs that have been developed to meet these needs. Information was obtained from a literature review and from the survey questionnaires used in this study. Thus, the first model to be discussed will be the utilization of practitioners (applicable to both NPs and PAs) in the hospital setting, as providers of employee health care.

The second NP/PA utilization model was developed as a result of responses to our survey questionnaire, by practitioners currently providing health care for various industries. Appendices A and B contain the surveys used in this study. Results have been tabulated for the readers benefit. It is hoped that the survey results can serve as a general guide for those NPs and PAs interested in pursuing a career in industrial-occupational health care.

Hospital Employee Health Services: An Overview.

Journal articles discussed in the following paragraphs describe hospital employee health services that have been implemented in various hospitals around the country. This information should assist the reader in understanding the scope of services that are being, and could be, implemented in the hospital setting.

Brown,[74] a public health educator, and one of her colleagues, were aware of the many health hazards present in the hospital and to the hospital workforce. They conducted occupational health and safety educational sessions for the membership of a hospital workers' union. These sessions taught non-professional workers how to recognize hospital hazards, how to eliminate or minimize these hazards, and informed workers of their legal right under the California Occupational Safety and Health Act. The authors state that the sessions

were "enthusiastically received by the rank-and-file members." This article cited statistics compiled by the California Division of Labor Statistics and Research that demonstrated a high incidence of occupational illness among hospital workers compared to workers of other industries. Non-professional hospital workers were found to have a higher incidence of job-connected injuries and illnesses than did the professional staff.

A rubella screening and immunization program was implemented in a large urban hospital in New York in order to comply with the New York State Health Code, which required that all women of childbearing years who work in health institutions be screened for rubella and offered immunization against rubella. An evaluation of the program after two years of operation demonstrated that the program was successful in identifying women of child bearing age who were susceptible to rubella. An interesting finding was that a large number of these susceptible women stated that they had contracted rubella in childhood. Sixty-six percent of the susceptible women were vaccinated. The authors conclude that the rubella screening program, in addition to successfully capturing the "at risk" population, provided continuing education for the hospital workforce.[75] A rubella screening program, then, works for the benefit of debilitated patients who might be susceptible to rubella, and who should be protected from hospital workers not all ready immune.

Werdegar,[76] in her article on hospital employee health, states that the objectives of an effective employee health program generally include the following: 1) first aid care and follow-up for all occupational illnesses and injuries, 2) first aid care for non-occupational injuries and illnesses, 3) monitoring employees' progress when he or she is an in-patient, 4) providing individual health education and counseling, 5) "clearing" personnel who are returning to work after an illness or injury, 6) keeping hospital personnel informed about the scope and regulations of the employee health program, 7) maintaining confidential health records on all employees, 8) ensuring that an employee's health is not a hazard to himself or others in the hospital, 9) encompassing sound infection control measures. The author stresses this last point. She states that infection control measures include: 1) identifying specific risks of infection associated with employment in individual hospital areas, and providing methods to monitor, prevent or treat the disease accordingly, 2) assisting in the attempt to prevent transmission of infection to patients by employees, 3) assisting in the detection and control of outbreak of infections among personnel, 4) detecting carriers when implicated by surveillance data, and 5) encouraging good personal hygiene and health habits among all personnel.

To meet these objectives, Werdegar says that employee health services must include the following programs:

pre-employment (placement) examinations
routine and periodic physical examinations
prophylaxis for accidental exposure to communicable diseases
work and patient assignment criteria for employees particularily susceptible to specific diseases.

Werdegar says that the program's effectiveness, implementation and employee compliance will depend on the hospital's philosophy of employee relations,

the hospital's committment to its patients for providing high quality care and protecting them from nosocomial disease, and depends to some extent on whether there is pressure from health care unions to incorporate programs of employee protection into their contract negotiations. Each hospital must assess for itself, according to Wedegar, the cost: benefit: risk ratio associated with each aspect of the program.

Babbitz[77] writes that hospitals continue to neglect the health needs of employees and cites one reason for this neglect as being the misconceived notion that the hospital environment is intrinsically safe and healthful. The author declares that management, in many hospitals, "believe it is more cost-effective to ignore employee health totally or sometimes to just provide limited drug and hospital services at a discount," instead of organizing a comprehensive employee health program. The author identifies health and safety risks present in hospitals. Examples include: noise exposure; exposure to chemical agents; slippery floors; electrical hazards; wounds from equipment, needles, broken glass; infectious diseases; high heat levels in certain hospital areas; ionizing radiation exposure; chronic exposure to anesthetic gases; maintenance workers' exposure to harmful dusts and machinery; drug abuse among hospital employees; and the less easily defined problems such as fatigue and stress among employees. The author concludes by saying that "it is cost-effective to put a sound effort into the control of occupationally related injuries and illnesses. The savings in lost time and reputation more than pay for the effort.... If preventive health care is also included in the program, the benefits could be extended to include a population of healthier, happier and more productive hospital employees."

MODEL I - UTILIZATION OF NPs AND PAs IN HOSPITAL EMPLOYEE HEALTH PROGRAMS

The preceding pages gave an overview of what is being done, and what can be done in hospital employee health programs. To be discussed next are services California practitioners are providing in various hospitals. This information comes from survey questionnaires sent to 9 nurse practitioners and 1 physician assistant, all of whom provide hospital employee health care.

Functions of NPs and PAs in Hospital Employee Health Programs.

Results of the survey indicate that NPs and PAs are providing the following services to hospital employees:

- Pre-employment physicals
- Periodic physicals
- On-the-job illnesses
- On-the-job injuries
- Infectious disease screening
  - TB testing
  - Exposure follow-up
- Provide counseling in the areas of alcohol abuse; stress management; and weight control
- Provide health promotion and improvement through health education
- Generally handle workers' compensation cases

The numbers of employees in these hospitals ranged from 420 to over 3,000. All responding practitioners said they did have a supervising physician who either consulted, signed charts, or did both.

Pre-Employment Preparation.

When asked if the hospital had an existing employee health program, three practitioners answered yes, and four answered no. Specific preparation for an employment interview consisted of consulting with persons currently working in an employee health program of a hospital; research on the hospital's needs, policies, etc; and writing program proposals. Four practitioners initiated the interview, two answered advertisements, one was asked. Six practitioners said the hospital had an understanding of their role; one did not.

Ideas for employee health care programs brought to the interview by these practitioners were:

Ideas	Number responding (Total 7)
Pre-employment physical exams	2
Health education	3
Health promotion	3
Employee fitness	1
Weight reduction	1
Smoking cessation	1
Stress reduction	2
Hypertension program	1
Disease prevention	1
Infectious disease control	1
Handle workers' compensation claims	1

Employment Arrangements.

All of the responding practitioners indicated that they were salaried hospital employees. The salary range was not elicited.

The practitioners stated that specific needs for employee health care were expressed by some of the hospitals. These needs were:

Centralized treatment and follow-up of on-the-job injuries.
Continuity of care.
Decrease the costs of pre-placement physical examinations (previously contracted out to private physicians).
Decrease sick-leave and lost work days.
Decrease the incidence of injuries.
Decrease the costs of workers' compensation.
Reinforce, or institute, an employee safety program, in accordance with OSHA guidelines.
Desires a practitioner with knowledge of workers' compensation laws.
Other desirable assets included being capable of working in labor relations, and in helping to avoid union disputes and complaints.
One hospital wanted a "back care" program instituted, to decrease injuries.
One hospital needed a practitioner to help them comply with Title 22 and OSHA regulations.
Institution of unspecified employee assistance programs.

The six NPs and one PA responding to the survey questionnaire are employed by the hospitals listed below:

Santa Rosa Memorial Hospital; Santa Rosa, California
Eskaton American River Hospital: Carmichael, California
Warrach Hospital; Santa Rosa, California
U.C. Davis, Sacramento Medical Center; Sacramento, California
Mercy Medical Center: Redding, California
Sutter Community Hospital; Sacramento, California
Palo Alto Veterans Administration Hospital; Palo Alto, California

Santa Rosa Memorial Hospital has contracted with eleven industries for the provision of employee health and related programs. The industries include the Coast Guard and the Department of Motor Vehicles. Two NPs provide these services to the eleven industries, in addition to providing similar services to the employees of Santa Rosa Memorial Hospital.

OTHER FACTORS TO CONSIDER

Hospital Laws and Regulations.

Before interviewing or making application with a hospital, the NP or PA should know the hospital's existing laws and regulations, including employee relations. Many hospital By-Laws give a hospital legal authority to regulate functions and privileges granted to health practitioners. This last point is

important to explore particularily when a hospital has no existing employee health care program and/or has never worked with a PA or NP.

Approaching the Hospital Adminstration: Suggestions.

Before approaching the administration it is helpful to discuss your program ideaa with a staff physician who supports the practitioner concept. Arrange a meeting with the hospital administrator and invite your physician supporter to attend. Bring with you information on the legal aspects and the scope of practice pertinent to practitioners. Bring other articles that document the quality of care and cost-effectiveness of PA and NP utilization, plus documentation of cost-effective health maintenance programs. Elicit the hospital's needs and discuss your ideas for an employee health program. It is wise to suggest to the administration that the hospital develop a protocol of written policies, with your input, that will direct the activities and your responsibilities. Other areas the protocol should delineate are: the process for application submission and review, a statement specifying the qualifications of employee health practitioners, programs to be developed, C.M.E. requirements and time-off, procedures for granting and withdrawing privileges, and a mechanism for appeal of a decision by the credentials committee of the medical staff. Parts of this section were derived from an article printed in the Physician Assistant and Health Practitioner journal, September, 1981.

The next model for the utilization of NPs and PAs in industrial-occupational health care has been taken from information already provided in this paper and from survey questionnaires received from occupational health nurse practitioners, an industrial health PA, one correctional institution NP and one industrial health education NP.

MODEL 2 - UTILIZATION OF NPs AND PAs IN INDUSTRIAL-OCCUPATIONAL HEALTH CARE

Industrial employee health care services vary from one industry to another. This paper has identified four basic components found in industrial health care programs which are appropriate to all industries. These components will again be listed. Programs for which cost-effectiveness studies have been done and those proving to be beneficial to industry will be stated first. Other components which are being offered in some industries, and which need to be considered, will be listed under the category "other programs."

Following this, the results of the survey questionnaire answered by Occupational Health Nurse Practitioners, an industrial health PA, a correctional institution NP, and an industrial health education NP will be presented.

Basic Components of an Industrial Health Maintenance Program.

The following are components that are considered basic to any industrial health program:

Pre-employment (placement) physical examinations and medical histories.
Periodic, individual health appraisals.
Care of minor ailments and occupational disabilities.
Preventive services; Health education and personal health counseling.

Programs Documented as Being Cost-Effective and Beneficial.

This list is not meant to be comprehensive. This study involved a literature review and from the review programs that were studied for cost effectiveness and other benefits were selected for inclusion in this paper. The list of such programs include:

Pre-employment histories and physical examinations
Periodic physical examinations
Health promotion and disease prevention programs such as; health education, health counseling and physical fitness.

Under health education the following programs are considered beneficial and cost-effective:

Alcohol awareness
Drug awareness
Programs on worksite hazards

Under health counseling the following programs are considered beneficial:

Stress reduction and management
Individual, personal counseling: health, job, family, marital

Other Services that Are Being Provided to Industrial Employees.

The following program examples were obtained from one of many papers presented at a continuing medical education program in Occupational Medicine, Medical College of Georgia, October 1-3, 1981:

Family planning
Pregnancy program
Hearing and vision conservation
Weight reduction program
Respiratory protection
Smoking-cessation program
Safety program
Off-the-job safety program
Hypertension screening program
Immunization program
Worker assistance program
Retirement program
Disaster plan program

INDUSTRIAL HEALTH PRACTITIONERS SURVEY RESULTS

Four out of six Occupational Health Nurse Practitioners contacted responded to the survey questionnaire. Three of the four are currently working in an industrial setting. One NP is "gaining more primary care experience" and is working at a Kaiser Hospital. Each represented industry and the components of their employee health program will be discussed in the following paragraphs. These six OHNPs represent the first graduating class of the University of San Francisco's master's-level training program.

Next to be discussed are the survey results obtained from a correctional institution NP, in Industrial Health Education NP, and an Industrial Health PA.

Occupational Health Nurse Practitioner Survey Results.

Listed below are the industries represented by each of the three responding OHNPs, and the components of each employee health program.

Industry	Employee Health Components
Safeway Stores, Inc. Bay Area	
1. Type of industry: Foods 2. Number of employees: 1100 3. Employment arrangement: NP is salaried employee, working on the industry's premises.	1. Pre-employment physical examinations 2. Periodic Physical Examinations 3. On-job illnesses 4. On-job-injuries 5. Health Counseling, life style 6. Health Improvement-program unspecified 7. Handles workers' compensation claims

Safeway Stores, Inc. was interested in decreasing their accident and disability rates.

Industry	Employee Health Components
Center for Municipal Occupational Safety and Health San Francisco General Hospital, Employee Health Services	
1. Type of industry served: varies 2. Number of employees: varies 3. Employment arrangements: NP is a salaried employee with a Civil Service status. Works out of the hospital's medical clinic.	1. Pre-employment physical examinations 2. Periodic physical examinations 3. Health Counseling: Preventive programs (unspecified)

Industry	Employee Health Components
Environmental Health Associates Private Consulting Firm Bay Area	
1. Type of industry served: mostly manufactoring and chemical research firms 2. Number of employees: varies 3. Employment arrangement: NP is salaried by Environmental Health, but the firm contracts with industries for their services. NP works out of MD office and travels to contracted industries to provide services.	1. Pre-employment physical examinations 2. Periodic physical examinations 3. On-job-illnesses 4. On-job-injuries 5. Health Counseling-varies with industry's needs. 6. Handles workers' compensation claims

Industries contract for consultation services such as how to develop their own employee health program, how to set up medical record keeping. The industries may also contract for direct health services. In general, the industries were interested in special programs that would identify and address workplace health risks.

All three NPs have physician supervision, consisting of consultation and/or chart signing. Two of the NPs were recruited by the industry; one NP initiated the employment interview.

Correctional Institution NP.

Industry	Employee Health Components
County Jail Northern California	

1. Type of industry: County jail
2. Number of employees and others receiving health care: 25 employees, and 200 plus prisoners.
3. Employment arrangement: NP is a salaried employee, working on the jail premises.

1. Pre-employment physical examinations
2. Periodic physical examinations
3. On-job-illnesses
4. On-job-injuries
5. Health Counseling: drug, alcohol and mental health
6. Health improvement program (unspecified)

NP has a supervising physician who acts as a consultant and signs charts.

Industry

Lifeline-Health Education and Fitness Programs
San Francisco, California

Employee Health Components

1. Type of industry served: Varies
2. Number of employees: Varies, thousands
3. Employment arrangements: NP works on contract basis to both industries and business. NP travels to the clients' premises.

1. Health Education: stress management
2. Physical Fitness programs
3. Health hazard appraisals and follow-up on programs developed to handle health hazards.

Industrial Health PA.

Industry

Poloroid Corporation
Maine

Employee Health Components

1. Type of industry: Manufacturing* cameras and film
2. Number of employees: 12,000 to 14,000
3. Employment arrangement: PA is a salaried employee, working on the industry's premises

1. Pre-employment physical examinations
2. Periodic physical examinations
3. On-job-illnesses
4. On-job-injuries
5. Health counseling: "short term"
6. Handles workers' compensation claims

The industry recruited the PA. The need of the industry was for primary care and the PA was wanted to "substitute for MD coverage." The PA has a supervising physician who consults and participates in conferences.

The scope of health services provided by the NPs and PA in this study correlates with the components of employee health programs that are considered basic to any industrial health program. The basic components were discussed earlier in thi paper.

SUMMARY

In summary, Federal and State Occupational Safety and Health Acts were developed to promote a safe and healthful working environment for employees. Compliance by industries, to the regulations of these acts is encouraged yet is done voluntarily. Industries, therefore, differ in their philosophies and commitments to employee health and safety programs.

Statistics demonstrate that California industries need to improve their illness and accident rates. Industries that do not have employee health and safety programs suffer in terms of operating costs, productivity and employee morale.

Despite the fact that some industries do have employee health and safety programs, the costs for health care incurred by these industries remain high. Methods for reducing industrial health care costs have been suggested by various studies. The suggestions include: 1) Utilizing Nurse Practitioners and Physician Assistants to deliver employee health care, as these practitioners are cost-effective, the quality of care they provide is as good as or better than care rendered by physicians, and consumer acceptance is high; 2) Industries can incorporate into a program those components of health care that have been shown to be cost-effective and beneficial. These programs are preventive in nature and include the following components:

a) pre-placement medical histories and physical examinations
b) periodic health appraisals
c) care for minor ailments and occupational injuries
d) health education and personal health counseling, such as alcohol awareness, drug awareness, stress management and physical fitness.

3) Industries can bargain with their labor unions for the inclusion of employee health maintenance programs in their employee benefit packages; and, 4) To reduce health insurance premiums, industries can become self-insured.

Since one of the goals of this study was to inform NPs and PAs on industries' health and safety needs and on how they might help to meet these needs, a survey questionnaire was developed and mailed to NPs and PAs currently working in industrial health care. Results of the survey suggest that these practitioners are offering comprehensive employee health care. The major source of industrial utilization of NPs and PAs in California appears to be the hospital industry. Utilization concentrates on employee health care programs. To give the reader an understanding of the scope of programs developed for hospital employees, articles on this topic were reviewed. In addition, two models for the utilization of NPs and PAs in industrial health care were explained. The first model pertains to hospital employee health care and the second model has a broad industrial application.

The information contained in this study will hopefully serve as a guide for those NPs and PAs interested in pursuing a career in industrial health care. For those practitioners contemplating industry as an expanded employment opportunity it is hoped that this study has sufficiently motivated you to do more research in this area.

One final comment. While this study has built a strong case for the

utilization of NPs and PAs in industrial health care, there remain barriers than can inhibit effective utilization, thereby denying health consumers quality care at lower costs. One barrier needing further study is the health care reimbursement policies of third party health insurors. Restrictions on NP and PA reimbursement and restrictions on the types of health care services delivered, not reimbursed by insurors, are unnecessarily adding to the high costs of health care for both industry and the consumer. Today is not too late to take deliberate measures that can effect changes to this barrier.

REFERENCES

1. U.S. Department of H.E.W. Supply and Distribution of Physicians and Physician Extenders: A Background Paper. Prepared for the Graduate Medical Education National Advisory Committee. 1977, Pp. 36-55.

2. U.S. Department of Health and Human Services. Report of the Graduate Medical Education National Advisory Committee. September 30, 1980, Vol. VI.

3. Andrus M.D., L. H., O'Hara-Devereaux, M., Seigler M.D., R., and Mitchell PhD., Ferd. The Health Care Team. 1977.

4. Sox, Harold C. Quality of Patient Care by Nurse Practitioners and Physician Assistants: A Ten Year Perspective. Annals of Internal Medicine. September, 1979; 91 (3): 460-467.

5. Bessman, A.N. Comparison of Medical Care in Nurse Clinician and Physician Clinics in Medical School Affliated Hospitals. Journal of Chronic Disease. 1974; 27: 115-25.

6. Sackett, D.J., et.al. The Burlington Randomized Trial of the Nurse Practitioner: Health Outcomes of Patients. Annals of Internal Medicine. 1974; 80: 137-42.

7. U.S. Congressional Budget Office. Physician Extenders: Their Current and Future Role in Medical Care Delivery. U.S. Government Printing Office. April, 1979; 9: 11.

8. Andrus, L.H., et.al. 1977; 13.

9. Sox, Harold C. 1979; 460-467.

10. Pender, PhD., Nola, and Pender Phd., Albert. Illness Prevention and Health Promotion Services Provided by Nurse Practitioners: Predicting Potential Consumers. American Journal of Public Health. August, 1980; 70 (8): 798-803.

11. U.S. Congressional Budget Office. 1979; 11.

12. Morgan M.D., Walter A. Nurse Practitioner and Physician's Assistant Clinics in Rural California. Part II: A Survey. Western Journal of Medicine. March, 1980; 132 (3): 264.

13. U.S. Congressional Budget Office. 1979; 16-17.

14. U.S. Department of H.E.W. Collection and Processing of Baseline Data for Physician Extender Reimbursement Study. Final Report. April 31, 1979; 82.

15. Trail PhD., Ira D. An Expanded Role for the Occupational Health Nurse. Occupational Health Nursing. June, 1976; 24 (6): 7-10.

16. Andrus M.D., L.H., Mitchell Phd., Fer, and McGriff, L.D. Primary Care: Whose Responsibility and Who Should Deliver It? Paper presented at a symposium for the American Association for Comprehensive Health Planning. December 9-10, 1977; 34-35.

17. Economic Feasibility and Diagnostic Mix of Family Nurse Practitioners. Public Health Reports. March-April, 1979; 94 (2): 149-155.

18. Nelson, E.C., Jacobs, A.R., Cordner, K., Johnson, K.G. Financial Impact of PAs on Medical Practice. New England Journal of Medicine. September 11, 1975; 193: 527-530.

19. Kaiser Foundation Hospitals. Cost Effectiveness of Physician Assistants. Portland, Oregon. 1976. NTIS HRP-0016136. 357p.

20. Jennengs, R.N., Carole. Nursings Case for Third Party Reimbursement. American Journal of Nursing. January, 1979: 111-14.

21. Weston, R.N., ScD., Jerry. Distribution of Nurse Practitioners and Physician Assistants: Implications of Legal Constraints and Reimbursement. Public Health Reports. May-June, 1980; 95 (3): 255-57.

22. Jones, Bert., and Best-Stevens, Nancy. Overcoming Economic Barriers to Health Care. Health Education. November-December, 1975: 6 (6): 7-10.

23. U.S. Department of H.E.W. Review and Analysis of State Legislation and Reimbursement Practices of Physician's Assistants and Nurse Practitioners: Final Report. H.C. Miller, Project Director. Contract No. HRA 230-77-0011. January, 1978.

24. Kirstein, Marvin M., Arnold, Charles B., and Wynder, Ernst L. Health Economics and Preventive Care. Science. February 4, 1977; 195: 457-62.

25. Warner, K.E. Economic Implications of Preventive Health Care. Michigan University, Dept. of Health Planning and Administration. July, 1978. NTIS HRP-0028676. 45p.

26. Iglehart, John K. Priorities for a National Health Policy: Cost Control and Disease Prevention. Hospital Progress. February, 1978; 59 (2): 51-53.

27. State of California Department of Industrial Relations. A Guide to CAL/OSHA. CAL/OSHA Communications Unit. October, 1980; 2.

28. _____. p. 2.

29. _____. p. 4.

30. California Department of Industrial Relations. Occupational Injuries and Illnesses Survey, California, 1979. Division of Labor Statistics and Research, May, 1981.

31. California Department of Industrial Relations. Work Injuries and Illnesses in California, Quarterly. Division of Labor Statistics and Research. July-September, 1979. Published July, 1981; 2.

32. _____. p. 3.

33. _____. p. 3.

34. _____. p. 2.

35. California Industrial Relations Reports. Safety and Health Provisions in Private Sector Collective Bargaining Agreements. Division of Labor Statistics and Research. Report No. 41. January, 1981; 3.

36. California Department of Industrial Relations. July-September, 1979; 9-10.

37. _____. p. 54.

38. _____. p. 4.

39. _____. p. 7.

40. Metcalf M.D., Wendell O. Health Maintenance Programs for Small Business. Small Business Administration. Washington, D.C. 1964; 2.

41. _____. p. 2-3.

42. _____. p. 2-3.

43. General Practitioner, Chico, California. Interview. September, 1981.

44. California Nurse Practice Act, 1978.

45. Metcalf. 1964; 10.

46. _____. p. 17.

47. Shelton, Jack. Health Costs. Industry is Demanding Results. Osteopathic Hospitals. March, 1978; 22 (3): 14-17.

48. Park, William C. Private Industry's Response to Rising Health Care Costs. Texas University Medical School, Houston. Texas Medicine. January, 1978; 74 (1): 63-67.

49. Kirstein, et. al. 1977; 457-62.

50. Metcalf. 1964; p. 4.

51. _____. p. 4.

52. Strasser, Alexander L. Health Education in Industry. Occupational Health and Safety. April, 1980; 25.

53. Secretary of H.E.W. Public Health Service, National Institute on Alcohol Abuse and Alcoholism. Alcohol and Health. Third Special Report to the U.S. Congress. June, 1978. Ernest P. Nobel, Ed. Pp. 1-98.

54. Schramm, Carl J. Evaluating Industrial Alcoholism Programs: A Human-Capital Approach. Journal of Studies on Alcohol. 1980; 41 (7): 702-12.

55. Dunne, J.A. Evaluating the New York City Police Department Counseling Unit. Alcoholism and its Treatment in Industry. C.J. Schramm, Ed. Baltimore. 1977; 91-108.

56. Thrope, J.J. and Perret, J.T. Problem Drinking: A Follow-Up Study. Archives of Indian Health. 1959; 19: 24-32.

57. Asma, F.E., Eggert, R.L., Hilker, J.R. Long-Term Experience with Rehabilitation of Alcoholic Employees. Journal of Occupational Medicine. 1971; 13: 581-85.

58. Secretary of H.E.W. June, 1978; 79.

59. _____. p. 97.

60. _____. p. 52.

61. _____. p. 52.

62. Metcalf. 1964. p. 9.

63. _____. p. 17.

64. Rhodes, Edward C., and Dunwoody, Douglas. Physiological and Attitudinal Changes in Those Involved in an Employee Fitness Program. Canadian Journal of Public Health. September-October, 1989; 71: 331-36.

65. Durbeck, D., et. al. Health Evaluation and Enhancement Program. NASA. U.S. PHS. American Journal of Cardiology. 1972; 30: 784-90.

66. Horne, William. Effects of a Physical Activity Program on Middle-Aged Sedentary Corporation Executives. American Ind. Hyg. J. March, 1975; 236: 166-69.

67. Durbeck. 1972. p. 784-90.

68. Cooper, K.H., et. al. Physical Fitness Levels vs Selected Coronary Risk Factors: A Cross-Sectional Study. J.A.M.A. 1976; 236: 166-69.

69. Fox, Skinner S. Physical Activity and Cardiovascular Health. American Journal of Cardiology. 1974; 14: 731-46.

70. Kirstein, et. al. 1977. p. 457-62.

71. Anderson, Richard C. Reducing the Costs of Employee Health Insurance. Journal of American Water Works Association. 1978; 70 (6): 305-07.

72. Goldbeck, Willis B. Trends in Employee Health Insurance May Stem Rising Costs. Forum. 1978; 2 (4): 13-15.

73. _____. p. 13-15.

74. Brown M.P.H., Marianne P. Hazards in the Hospital: Educating the Workforce through its Union. American Journal of Public Health. 1979; 69: 1040=43.

75. Weiss, R.N., K.E., Falvo M.D., C.D., Buimovici-Klein M.D., E., Magill M.D., J.W., and Cooper M.D., L.Z. Evaluation of an Employee Health Service as a Setting for a Rubella Screening and Immunization Program. American Journal of Public Health. March, 1979; 69 (3): 281-83.

76. Werdegar R.N., Dianne. Employee Health. Nursing Clinics of North America. December, 1980; 15 (4): 769-85.

77. Babbitz R.N., Matilda A. Hospitals: Neglecting the Need for Employee Health Programs. Occupational Health and Safety. June 19, 1980; 46-48.

INDUSTRIAL-OCCUPATIONAL PRACTITIONER SURVEY

N.P.s and P.A.s

Please answer as many of the following questions as possible. Mail the survey in the enclosed by October 12, 1981.

Your Name:_____ Address:_____

_____

Telephone:_____ Home; _____ Work.

---

1. Name of industry:

2. Type of industry:

3. Approximate number of employees:

4. Employment arrangement. (Please check appropriate spaces.) Were you employed as an industry employee?___ On a contract basis?___ Through a contracting medical clinic?___

5. How are you reimbursed for your services? (Please check appropriate spaces.) Salaried employee?___ Through a health insurance company?___ Contract payments?___ Other arrangement_____

_____

6. Did you initiate the employment interview?___ Did you respond to an employment advertisement?___

7. Did the industry have an employee health plan prior to your employment?___

8. Did the industry have a prior understanding of the role (functions) of Physician Assistants and Nurse Practitioners?____

9. What steps did you take in preparing to apply with the industry? (For example, did you research the industry, its safety and health programs) Please explain:_____

_____

10. What ideas for health care programs did you bring with you to your interview? (Your answer will be extremely helpful.)

_____

_____

11. What were the specific needs for employee safety and/or health as expressed by the industry? _____

_____

_____

12. What are the components of your program? (Please check appropriate spaces.)

pre-employment physicals	____	workmen's compensation claims	____
periodic physicals	____	counseling ____ type	_____
on-job illness	____	health improvement program	____
on-job injuries	____	employee assistance program	____
other _____	____	type _____	

13. Do you have a supervising physician? ____ If so, what does this supervision involve? consult____ chart signing____ other_____

_____

14. Were you involved in industrial-occupational health in a previous job? ____ type of industry? _____

Any input concerning obstacles you had to deal with, compromises you or the industry made, and strategies you developed in promoting your role in the industry would be of great benefit to our study. You can use the back side of this page to explain.

Thank you again for your assistance.

Industrial-Occupational Practitioner Survey
Nurse Practioner and Physician Assistant, California 1981

Survey Questionnaire Answers

	H.N.P.	O.H.N.P.	C.I.P.	H.Ed.N.P.	I.PA* (Maine)
Total	10	6	1	1	1
Responded	7	3	1	1	1
Results					
3. No. employees					
Total	17,370*	varies	225	2,000	14,000
A.V./NP/PA	2,481		varies	varies	13,000
4. Employment arrangement					
Employee	7	3	1	0	1
Contract,self	0	0	0	1	0
Contract,clinic	0	0	0	0	0
5. Reimbursement					
Salaried	7	3	1	0	1
Hlth. Ins. Co.	0	0	0	0	0
Contract	0	0	0	1	0
6. Interview					
Self initiated	4	1	0	1	0
Answered ad	2	0	0	0	0
Neither	1	2	1	0	1
7. Existing employee health plan					
Yes	3	2	1	1	1
No	4	1	0	0	0
8. Industry familiar with NP/PA role					
Yes	6	3	0	0	1
No	1	0	1	0	0
Unsure	0	0	0	1	0

9. Interview Preparation.

Hospital Nurse Practitioners (HNPs)

Prior experience.
-Came to interview with prior ability for writing programs and program policies.
-Researched the industry prior to interview.
-Researched other hospital employee health programs prior to interview.

Occupational Health Nurse Practitioners (O.H.N.P.s)

-Talked with medical personnel who had peripheral knowledge of the industry.

Correctional Institution Nurse Practitioner (C.I.P.)

-Reviewed Title 15 requirements.

Health Education Nurse Practitioner (H.Ed.N.P.)

-Discussed program possibilities with other health professionals.

Industrial Physician Assistant (I.PA)

-Had prior clinical rotation with the industry.

10. Ideas brought to the interview.

Hospital Nurse Practitioners (H.N.P.)

-Worker's compensation claims--examinations and follow-up.
-Pre-employment examinations.
-Prevention-type programs.
-Programs aimed at decreasing lost work days.
-Programs designed to avoid "mass screening," and unnecessary laboratory work.
-Programs for infectious disease exposures.
-Programs for health education and health promotion (physical fitness, weight reduction, smoking cessation, stress reduction, and hypertension control).

Occupational Health Nurse Practitioners (O.H.N.P.)

-Health promotion and disease prevention.
-Increase access to health care provider.
-Program for health hazard intervention.

Correctional Institution Nurse Practitioner (C.I.P.)

-Primary care program.

Health Education Nurse Practitioner (H.Ed.N.P.)

-Stress management.
-Physical fitness.

Industrial Physician Assistant (I.P.A)

-No preconceived ideas.

11. Industrial Needs (expressed by industry):

Hospital Nurse Practitioners (H.N.P.)

-Health programs that will comply with O.S.H.A.
-Provider who has knowledge of worker's compensation laws.
-Provider experienced in labor relations.
-Programs to decrease injuries.
-"Back care" program.
-Programs that will comply with Title 22.
-Employee assistance programs.
-Need for centralized programs--for treatment of on-the-job injuries and health monitoring.
-Need to decrease costs of pre-employment exams.
-Need programs aimed at decreasing sick leave.
-Need to decrease costs of worker's compensation claims (decrease injury rates).

Occupational Health Nurse Practitioners (O.H.N.P.)

-Programs to decrease accident and disability rates.
-Programs to identify and address the health effects of specific toxic agents.

Correctional Institution Nurse Practitioner (C.I.P.)

-Need to design employee and prisoner health programs that are cost-effective.

Health Education Nurse Practitioner (H.Ed.N.P.)

-Stress management program.
-Program in effective communication.

Industrial Physician Assistant (I.P.A)

-Primary care for employees.
-"Substitute for M.D. coverage."

12. Program Components

	H.N.P.	O.H.N.P.	C.I.P.	H.Ed.N.P.	I.PA.
Pre-employ. PE	7	3	0	Health hazard	1
Periodic PE	6	3	1	Appraisals	1
On-job illness	6	2	1	0	1
On-job injury	6	2	1	0	1
Workers' comp.	4	2	0	0	1
Counseling	5*	3	1	1	1*
Type-Alcohol	1	unspecified	1	0	
Stress	1	programs	1	1	
Weight	1		1	0	
			mental		
Health improvement program (type)	4*	2*	1*	physical fitness 1	0
Employee assist. programs	3	0	0	0	0
Type-Alcohol	1				
Drug	1				
Marital	1				

Other

TB testing; F/U infectious disease exposure.

*Some respondents did not specify type of programs.

		H.N.P.	O.H.N.P.	C.I.P.	H.Ed.N.P.	I.PA.
13.	Supervising physician					
	Yes	7	3	1	0	1
	No	0	0	0	1	0
	Supervision of:					
	Consult.	6	3	1	Staff consultation	1
	Chart signing	4	2	1	"	0
	Other	0	0	0	0	Meetings
14.	Prior work in industry					
	Yes	2	1	0	0	
	No	5	2	1	1	1
	Obstacles	1. Physician availability 2. Convincing industry on benefits of prevention programs.		None	None	None
	Compromises	None		None	None	None
	Role promotion	1. Formation of an association for hospital employee health practitioners.		None	None	None

ADDENDUM TO

INDUSTRIAL-OCCUPATIONAL PRACTITIONER SURVEY

O.H.N.P.

15. Are you providing health services: On the industry premises? ____ In a physician's office?____ In a medical clinic?____ Our of a physician's office or medical clinic, but travel to the industry to provide services?____ IF YES, to this last question, return to question 12 (in Appendix A) and circle the services you provide on-site.

16. Third party reimbursement for NP and PA services: Do you bill for services under the industry's name?____ Under a private physician's or clinic's name?____ Under your name?____

17. Are you reimbursed for health promotion and disease prevention programs?____ By industry as part of your salary?____ By third party insurance providers?____

18. Check the programs you are reimbursed for, and who reimburses your services.

	Programs	Industry	Insurance
____	Periodic physical examinations	_____	_____
____	PAP smears	_____	_____
____	Visual acuity	_____	_____
____	Hearing exams	_____	_____
____	Blood pressure screening	_____	_____
____	Diabetes screening	_____	_____
____	Alcohol awareness	_____	_____
____	Drug awareness	_____	_____
____	Stress reduction	_____	_____
____	Physical fitness	_____	_____

Answers to Addendum to Survey

TOTAL RESPONSES 3

	Total
15. Providing services:	
On-premise	2
MD office	0
Clinic	1
Out of MD office/ clinic--travel to industry	1
On-site services:	
Pre-employment PE's	
Periodic PE's	
On-job illnesses	
On-job injuries	
Worker's comp. claims	
Counseling	
Yes	
No	
Type	
Health improvement program	
Yes	
No	
Type	
Employee assistance program	
Yes	
No	
Type	

Not answered by the 3 NPs. Services therefore presumed to be the same as listed in question #12.

16. Reimbursement:	
Bill under--	
industry	0
MD/clinic	0
your name	1

* Two NPs responded "NA"--presumed to mean "not applicable."

17. Reimbursed for:

Health promotion/ disease prevention Programs	
Yes	1
No	0

*One NP responded "NA"; one NP did not answer.

Reimbursed by:	
Industry	1
3rd party payors	0

*One NP responded "NA"; one NP did not answer.

18.

Programs reimbursed:	Industry	Insurance
Periodic PE's	1	0
PAP smears	0	0
Visual acuity	1	0
Hearing exams	1	0
B.P. screening	1	0
Diabetes screening	0	0
Alcohol awareness	0	0
Drug awareness	0	0
Stress reduction	0	0
Physical fitness	0	0

*One NP responded.

EXPANDED EMPLOYMENT OPPORTUNITIES

FOR CALIFORNIA NURSE PRACTITIONERS AND PHYSICIAN ASSISTANTS

Industrial - Occupational Health Care

Phase II

An Educational Project Conducted For

SUPERIOR CALIFORNIA AREA HEALTH EDUCATION CENTER

Redding, California

Conducted by

Patricia A. Burke, F.N.P., M.A.
Industrial Education Project Consultant

April 1982

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INTRODUCTION

Phase II

The purpose of the second phase in this two-part study, was to integrate information generated from Phase I into a questionnaire that would be taken by trained interviewers to Northern California industries. Research was undertaken on industrial health care as a result of a perceived under-utilization of Nurse Practitioners (NPs) and Physician's Assistants (PAs) in this area of health care delivery. Phase I researched what is being done, and what could be done to improve the health and safety for industrial employees. The quality of health care provided by NPs and PAs, as well as the cost-effectiveness in the utilization of these practitioners was explored. Results of the research included documentation of various benefits to industry and employees after employee health care programs were implemented. In addition, other findings supported the contention that NPs and PAs provide quality health care in a cost-effective manner. The supporting research appeared to justify the attempt to expand employment opportunities for NPs and PAs into the industrial setting. Thus, Phase II of this study was implemented.

Included in this portion of the study was the development of an interview tool, and the training of NP/PA interviewers. The purposes of the interviews were to access the industries' employee health care needs and to introduce to the industries the concept of the NP/PA as a provider of quality, as well as cost-effective, health care.

Data was gathered from interviews with eighteen Northern California industries. A discussion of the interview results, interviewer comments, and conclusions are the focus of this paper. The appendices contain the interview tool, descriptions of participating industries, and tabulated results of the interviews.

STUDY DESCRIPTION

Phase 1 of this study documented the benefits to employees and to industries resulting from the implementation of employee health care programs. In addition, the study found that NPs and PAs provide quality and cost-effective health care and that their training qualifies them to deliver industrial health care programs. These two important findings suggest that industries would benefit from implementing employee health care programs and from utilizing NPs and PAs to deliver these services. With this information in hand, four PAs and two NPs from Northern California were trained to conduct interviews with industries in S.C.A.H.E.C.'s nine-county region. The purposes of the interviews were to access the needs of industries for employee health care programs, and to introduce the concept of the NP/PA as a provider of quality health care.

The interview tool was a carefully constructed, standardized questionnaire designed to elicit information from the industries, as well as to impart information to the industries. To encourage a free-flowing exchange of information between interviewer and industry, and to reduce the threat of exposing a less than perfect industry, anonymity was assurred both to the respondent and to the industry.

The respondents were asked questions about their industry's illness and accident rates, health and safety hazards, employee health care provisions, availability and type of medical care provider, and concerns relative to employee morale, productivity and personal problems. These questions were selected as an attempt to identify health care needs.

Interviews were conducted on the premises of eighteen industries, representing each of the nine counties in S.C.A.H.E.C.'s region. The types of industries interviewed were: manufacturing, forestry, acute care hospitals, post secondary schools, wholesale/retail trade, and utilities. The number of employees in each industry ranged from 20 to 900.

After each interview was completed, the interviewers were instructed to fill out an "interviewers comments" form which had been standardized to identify any problem areas with the interview tool, and/or difficulties experienced in the process of interviewing the respondents.

Questionnaire responses were tabulated and will be discussed in the next section.

DISCUSSION

An attempt has been made to categorize questions and responses into two areas. The first area, and the first for discussion, are responses to questions asking for factual information. Also included in this category are questions asking for the respondent's opinions, concerns. The second category includes questions that could be answered hypothetically. Included are respondents opinions on what might, ought or could be done to change a certain situation.

To begin, it is helpful to know if an industry and its environment present potential health and safety risks to the workforce. Of the 18 responding industries, 17 (94%) indicated that these risks did exist, in the form of dangerous equipment, the use of chemicals and gases and other materials. Of these 17 industries, 5 (28%) have experienced employee illness and accidents related to these risks. It is interesting to note that only 6 (33%) out of the 18 respondents had any information on their industries' illness and accident rates. Ten respondents (56%), however, said that such statistics were available either in another location or at another plant.

The respondents were asked what their major concerns were, relative to their employees. Four industries reported no concerns. Of the 14 industries expressing concerns, 11 were concerned about personal problems afflicting the employees; 4 responded that a decrease in employee productivity was a major concern; and 3 responded that the number of workers' compensation claims was a major concern. Respondents indicated other major concerns: number of lost work days, low employee morale, high illness and accident rates. Twelve out of the 18 industries cited the following problems as affecting their employees productivity. In decreasing order, they are: personal financial problems, family and marital problems, alcoholism, and drug abuse. Six industries indicated no such concerns.

The above information suggests that the majority of industries interviewed have concerns about employee health and safety, however, when the 18 respondents were asked if they considered their employees healthy, 100% said yes; some of these respondents said yes, basically. Indications of healthy employees ranged in responses from low absenteeism, to indications from "personal observations."

In response to the question, "In your opinion, do you feel that the health care needs of your employees are being met?", 12 (67%) of the 18 industries said "yes"; 4 said "yes, in some areas", and 2 said, "no." The following responses give some insight for the qualified "yes" and "no" responses to the above question.

Respondents were asked to name the employee health care provisions, or benefits provided by their industry. All 18 respondents replied:

Workers' Compensation-- 18 (100%)
Done by MDs-- 18 (100%)

Preplacement Physical
Examinations- 12 (67%)
Done by MDs - 12 (100%)

Periodic Physical
Examinations- 5 (28%)
Done by MDs - 4
" " RN - 1 (exam consists of TB skin test and lab work)

Accident/Injury
Care-------- 15 (83%)
Done by MDs- 14
" " Industrial first aid personnel- 1

Illness Care----- 7 (39%)
Done by MDs- 5
" " NP/PA-2

One industry provides "epidemic illness coverage" under the services of an Infectious Disease Control R.N.

When an illness or on-site accident occurs, 2 of the 18 industries have an R.N. initially assess the employee; 14 industries send the employee to an M.D.; 1 industry sends employees to either an MD or NP/PA; and 1 industry responded it did not send employees to either MDs, NP/PAs or R.N.'s. Three of the 18 industries send ill or injuried employees directly to an Emergency Room, whether or not a "true" emergency exists. Four industries said they do not send employees to an Emergency Room. The remaining industries (11) send employees to a physicians office or to an Emergency Room depending on the situation.

Only 3 of the 18 industries had formal working arrangements with MDs. Many industries had an "informal agreement" with local MDs for employee health care. In response to the Question, "Do your employees have easy access to medical care?", 14 out of 15 respondents said "yes," while one industry said "no."

Rising health care costs are a concern to consumers and to the medical profession. It was not known what industries were experiencing, or how they felt. To find out, a question asked for their opinion: "Do you feel that your industry is paying too much for health care?" and "where are the higher costs incurred?" In response to the first part of the question, 9 (50%) felt their industries were paying too much for health care.

In descending order, the highest cost were related to:

Health Insurance Premiums

Physicians' Fees

and Workers' Compensation Claim Payments

One industry respondent felt the industry was NOT paying ENOUGH for employee health care. The remaining 8 respondents stated they were satisfied with their industry's health care costs.

In addition to the above employee health care benefits provided by the industries, 9 (50%) had a formal safety program for all new employees. On-the-job type safety learning was not considered a formal safety program. However, some of the industries held "tail gate meetings" at regular intervals which involved all workers and which reinforced or introduced new safety measures. Ten (56%) of the 18 industries offer health-related classes to their employees. The health-related courses offered by most industries includes cardiopulmonary resuscitation and first aid. Other classes offered include: "stop smoking" classes, weight control classes, exercise classes, body mechanics, alcohol and drug abuse programs, and stress reduction classes.

The following findings were placed in the "hypothetical" category of questionnaire responses. Recall that 9 (50%) of the industries had formal safety programs for new employees. When the industries were asked if a safety program was needed in their industry, 6 (33%) responded "yes", and 9 responded "no." These results are somewhat confusing. Some of the industries who do have formal safety programs responded "yes" to the need for such programs, while others with formal programs responded "no" a program was not needed (presumably meaning they already had a program).

Eight (44%) of the 18 industries felt something could be done to change their illness and accident rates (meaning to improve these rates), while 9 (50%) felt nothing could be done. One respondent was unsure. Ideas for improving these rates included: offering more employee in-service classes, developing a safety committee, developing an employee health program, developing a safety program, developing a body mechanics class, and purchasing automated equipment.

Ideas for increasing the productivity level of employees ranged from health education/counseling programs to creating a positive reward system, better employee selection methods, and improving management/workforce relationships.

At the beginning of the interview session the interviewers introduced themselves as either an NP or PA who was conducting the interview for S.C.A.H.E.C. because they were interested in

industrial health care needs. At this point the interviewers asked the respondents if they had heard of NPs or PAs. Of the 18 respondents, 11 (61%) said "yes" they have heard, and 7 (39%) said "no." Regardless of the response the interviewers mentioned the educational training, roles, and functions performed by these practitioners. At the close of the interview, the interviewers asked the respondents if they would consider developing an employee health care program, and if so would they consider utilizing an NP or PA to provide the services. Eight (44%) of the 18 industries said they would consider developing an employee health care program, 8 responded "no", and 2 said they already had a program. Eleven, or 61% of the 18 respondents said they would consider utilizing an NP or PA to deliver employee health care services. One respondent was unsure, and 6 (33%) did not respond. Nine respondents said they would consider utilizing either an NP or PA. Two indicated a preference for NP utilization.

INTERVIEWERS' COMMENTS

For most interviewers, the interviewing process presented no major problems. Some difficulty was encountered in securing interviews with the industries. Each interviewer was to visit no less than two industries. Five cover letters that introduced the study, and five industrial response post cards were given to each interviewer to mail to industries of their choice in their assigned geographic area. Half of all cards were received after two weeks. Follow-up phone calls were necessary in some cases, to secure interviews. It was suggested that the interviewers contact the personnel managers of each industry to set up the interviews. It is likely that these particular contacts were not the best choice in these instances.

Many interviewers found that the respondent was not prepared at the interview to answer some of the factual questions. This occurred despite the fact that the cover letter stated what topics would be covered in the interview. Particularly disappointing was the lack of information on individual industry illness and accident rates. Only 6 out of the 18 respondents had such data at the interview.

One interviewer felt that several interview questions needed to be simplified. The respondents, in these instances, did not appear to understand what was being asked, were uncertain what information was needed, or had not thought about the topics prior to the interview. It has been suggested that when a respondent does not have an immediate response to a question, the question should be written out for him/her to answer and return to the interviewer as soon as possible.

In 90 percent of all interviews, the interviewer felt that the respondent was interested and motivated to continue the interview. One of the 18 respondents appeared to be disinterested, one respondent appeared defensive. However, no respondents appeared threatened, according to the interviewers.

CONCLUSION

This study was undertaken in an effort to expand employment opportunities for Northern California NPs and PAs. Industries were selected as the focus of the study because of a perceived under utilization of practitioners in these settings and because it was believed that both employees and industries would benefit from the implementation of employee health care programs.

Preliminary research, Phase I, provided the needed support to pursue this effort. California industries are experiencing increases in the incidences of occupational illnesses and accidents. Industries with employee safety and health programs, however, find that their rates are decreasing. In fact, results of various research indicate that employee health care programs increase employee productivity, increase workplace morale and decrease over-all production costs.

Phase II of this study consisted of assessing the needs of Northern California industries for employee safety and health programs. In addition, the concept of the NP/PA was introduced to these industries. Conclusions can be drawn from the data gathered in the interviews with the eighteen industries. The accumulated data suggests that:

1. Employee health and safety programs are needed in Northern California industries.

   -- Only fifty percent of the industries had a formal safety program for new employees.
   -- Only ten of the 18 industries offered health-related programs. Most of the programs are not held on a regular basis.
   -- Fifty percent of the respondents felt something could be done to improve their industries illness and accident rates.

2. Northern California industries should be approached in greater numbers with the possibility of developing employee health and safety programs.

   -- Eight of the 18 respondents said their industry would consider developing such a program.

3. NPs and PAs offer an alternative to current methods of industrial health care delivery.

   -- One of the major concerns to these industries is the high costs of medical care. Physicians' fees and health insurance premiums top the list of the greatest expenditures. Yet, nearly 100 percent of the industries utilize physicians to deliver employee health care. Nearly all physicians provide these services on a fee-for-service basis.

-- NPs and PAs are trained to deliver the kind of health care that most industries require. The high quality of care delivered by NPs and PAs and the proven cost-effectiveness of their utilization, suggests that industries will benefit from their services.

4. NPs and PAs must do a better job of promoting their profession.

-- Only 11 of the 18 respondents had heard of the NP or PA. However, at the conslusion of the interviews, over 50 percent said they would utilize an NP or PA if, and when, they developed an employee health and safety program.

It is reasonable to conclude that industries need, and are interested in, employee health care programs. The utilization of NPs and PAs to develop programs and to deliver these health care services is appropriate, appealing and apparently needed.

QUESTIONNAIRE

Introduction

Hello--I am_____, the person who will interview you for the S.C.A.H.E.C. study. (Pause) I would like to tell you about S.C.A.H.E.C. and the study they are conducting. S.C.A.H.E.C., or Superior California Area Health Education Center in Redding, is a non-profit organization presently under contract with U.C. Davis Medical School. The purposes of this organization are to study the supply, distribution, utilization and quality of medical care provided by physicians, resident physicians, Nurse Practitioners and Physician Assistants, nurses and other health professionals in a nine county region in Northern California (counties: Butte, Glenn, Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, and Trinity). S.C.A.H.E.C., as one of their current projects, is conducting a study on health care practices, and health care needs of Northern California industries. You may be wondering why your industry was contacted to participate in this study-- (Pause) Well, we believe you represent one of the major categories of industries found in Northern California, and as such, we are interested in your opinions relative to health care as it affects industry.

This same interview is being conducted at other Northern California industries for the same purposes. What we will do at the end of all the interviews is take a look at the results and determine what industry feels their health care needs are, how these needs are being met, how the industries would like their needs met, what problems, if any, exist in the delivery of health care to industries--for example, do employees have easy access to health care providers, does the delivery of health care pose financial burdens on the recipient industry?

We will also ask your opinion on the use of non-physicians, such as the Nurse Practitioner and Physician Assistant, in providing health care to industry.

S.C.A.H.E.C. contacted me to do the interview because I am a provider of health care, and because I am very interested in this study. I am a Nurse Practitioner (or Physician Assistant). Have you heard of Nurse Practitioners (or Physician Assistants).

Yes____ Fine, then you know that the Nurse Practitioner is a registered Nurse who has received advanced training. (Pause) NPs, as they are often called, perform medical histories, and physical examinations, and-- diagnose, treat, and counsel persons on health related matters.

Fine, then you know that a PA, as we are often called, has received advanced training through an approved medical school - (Pause) the PA takes medical histories, performs physical exams, diagnoses, treats, and counsels persons in health related matters.

No_____ (Well, the Nurse Practitioner . . . see above
Well, the Physician Assistant . . . see above)

The Nurse Practitioner then, as well as the Physician's Assistant are trained to do many medical tasks that were once done only by physicians.

My role here, today, is to conduct the interview for S.C.A.H.E.C. I can assure you that neither your name or your industry's name will be used in the write-up of our study.

Now I would like to let you know how I am going to conduct this interview. Some of the questions ask for your opinion, other questions ask more factual information. I will be writing down your comments as we go along, so I won't forget. The interview should take less than one hour. Do you have any questions so far?

(If you are in a noisy room or office, you ask now if he/she is comfortable conducting the interview here, in this particular room/office.)

Well, let's begin now.

Opening Questions

1. I am interested in learning about the nature of your industry, for example what do you manufacture (or produce), and how many employees do you currently have?

Industry type--in respondent's words: _____

_____

Number of employees: _____

2. Do you operate on a seasonal schedule? Yes____ No_____

(If Yes: When?) _____

(If No: Then, your industry operates year-round?) Yes____ No ____

(Explain) _____

3. What are the major types of equipment (or materials) used in your industry? _____

_____

4. Do you have a program that instructs new employees on the safe uses of equipment (or materials)? Yes____ No_____

(If yes: What does the program consist of?): _____

_____

(If answer is "on-the-job safety learning", ask: Then safety is not part of an orientation program?) Yes____ No_____

(If No: In your opinion, do you feel that a safety program is needed in your industry?) Yes____ No____ (Explain) _____

_____

_____

5. Can you tell me what provisions your industry makes for employee health care? Yes____ No____ (If yes: Can you name or list these provisions?) Yes____ No____ (Explain)_____

_____

_____

List or name provisions here--check applicable spaces:

Response: "Benefits are included." (Can you name the specific benefits?):

_____

_____

(Does your industry also provide): Check appropriate spaces:

____ Workers' Compensation. (Who provides the examination?)

_____

____ Pre-placement physical examinations. (Done by whom?)

_____

____ Periodic physical examinations. (Done by?) _____

_____

____ Accident/injury care. (Provided by whom?) _____

_____

____ Illness care. (Provided by whom?) _____

____ Other provisions? (Specify) or (for example):

Do you conduct any health-related classes for your employees?

Yes____ No____ (Explain) _____

Are these benefits provided on or off your premises?

On____ Off____ Combination of both____

(If off the premises: Do your employees have easy access to medical care? or in other words, are health care providers conveniently available?) Yes____ No____

6. *You mentioned that your employees see a (MD), (RN), (NP), (PA) - *use applicable provider shown in parenthesis, what type of working arrangement have you made with a physician for provision of your employees health needs? (For example, is the physician on a contract with you?): _____

_____

If applicable: What type of working arrangement have you made with the NP____ or PA____ for the provision of health care: (See probe above): _____

_____

If applicable: What working arrangement have you made with the R.N. for his or her services? _____

_____

7. What chemicals, gases, or other potentially dangerous substances do your employees handle? _____

_____

Or: mentioned earlier that some of your employees work around _____ _____ materials, does your industry use any other chemicals, gases or potentially dangerous substances? _____

_____

8. Have you encountered injuries or illnesses related to employee exposure to these (chemicals or gases): Yes____ No____

(For either response: What procedure does your (or would your) industry follow if this occurs?) (Explain): _____

_____

Or: Check applicable response:

____ RN initially sees employee

____ NP or PA initially sees employee

____ RN decides need for further care

____ NP or PA decides need for further care

____ Employee sent to physician's office

____ Employee sent directly to hospital Emergency Room (If E.R.: Is this because it is standard procedure or because the incident is considered an emergency?): _____

_____

9. Can you tell me what your industry's illness (absenteeism due to illness, on the job illness, and/or job-related illness) and accident rates were for 1979? Yes____ No ____ (You do not have access to this information. Do you think it is possible to obtain? Yes____ No____ No, do not have____)

If response is Yes to first question: 1979 Illness rate _____

_____ 1979 Accident rate _____

(How do these rates compare to your 1980 rates? Lower _____

_____ Same _____ Higher _____

If you have this background information: I have read your report to (OSHA?) concerning your industry's illness and accident rates for 19?? (year). How do those rates compare to 1980 rates? Lower____ Same____ Higher____

Is there anything, in your opinion, that could be done to change your illness and/or accident rates? Yes____ No____ (Explain below) (If Yes, can you explain?) _____

_____

10. In your opinion, would you say that your employees are healthy? Yes____ (What indications do you have?) _____

_____

No____ (What indications do you have?) _____

_____

11. What, in your opinion, could be done to increase your employees' productivity? ("Productivity": the worker's ability to meet production demands, or, the ability to meet the work load demands). Explain: _____

(For instance, do you provide rest periods during the work hours?; do you encourage the workers to exercise on their lunch hour?) Write in the response. _____

_____

_____

12. We all can appreciate the high costs of medical care today. Do you feel that your industry is paying too much for health care: Yes____ (Where are the higher costs incurred?) or (If respondent does not understand, or does not give relevant information, say: for example) in which of the following are your greatest costs found:

(Check appropriate spaces):

____ Health insurance premiums

____ Claims for workers' compensation

____ Physician fees

____ NP or PA fees

No____ (Then you are satisfied with the amount your industry pays?)

Yes____ No____ (Explain)_____

_____

13. In your opinion, what is the major concern to your industry, relative to your employees? Check applicable spaces: (or, what concerns, of the following, does your industry have?)

____ numbers of workers' compensation claims

____ decreased productivity

____ numbers of lost work days

____ high accident rates

____ low employee morale

____ high illness rates

____ personal problems of employee (Explain) _____

_____

14. Do you consider any of the following to be affecting your employees productivity? (and therefore the industry's productivity?)

____ Alcoholism problems

____ Drug or other substance abuse problems

____ Family or marital problems

____ Financial problems

How is your industry dealing with (these) (the) concern(s)?

(Explain) _____

_____

15. In your opinion, do you feel that the health care needs of your employees are being met? Yes___ No___ (Explain) _____

_____

This concludes the major portion of the interview. S.C.A.H.E.C. will be reviewing all participating industries' comments. If you are interested we will send you a copy of our study report. (Pause) Would you like a copy? Yes___ No___

There is one final area that I would like to discuss with you. The first portion of S.C.A.H.E.C.'s study resulted in a written report which documented, or identified, basic components, of an industrial employee health program. These basic components were found, by many studies, to increase worker productivity; decrease workers' compensation claims; decrease lost work days; decrease absenteeism due to personal problems of the employees, due to illnesses and injuries. Such basic components have been shown to save the industries' overall operation costs. The study also documented methods of providing quality health care at lower costs. One significant factor was the utilization, by industries, of NPs and/or PAs to provide the industry's health care. For instance, the NP or PA, whether salaried or on contract with the industry, was found to be less costly to the industry than was a physician secured by the industry for the purposes of providing identical care. Even when physician consultation is required by an NP or PA, the costs of like health care were less to industry when they utilized an NP or PA.

Now, from what you have just heard and from any opinions you may have formed prior to this interview, would you or your industry, in your own opinion, consider developing an employee health care program? Yes___ No___: (If Yes): Would you consider using NPs and PAs to provide the health care services? Yes___ No___

I you would be interested in seeing any of this documentation, including the results of this study, or if you are interested in learning more about how to increase worker productivity and save health care costs, we would be glad to discuss this with you at a time convenient to you. Do you have any comments or any other questions? Yes___ No___ (Explain):_____

_____

This completes the interview.

Descriptions Of Participating Industries

Industry A

Location: Tehama County
Type of Industry: Acute Care Hospital
Number of Employees: 252
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: X-ray; sterilizing and anesthetic gases; oxygen; medications and various drugs; syringes and needles; lab chemicals.

Industry B

Location: Tehama County
Type of Industry: Bank
Number of Employees: 74
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Computers and computer terminals; general office equipment.

Industry C

Location: Shasta County
Type of Industry: Consulting Engineering Firm. Includes surveying work.
Number of Employees: 150
Operating Schedule: Year round except for surveyors who sometimes work on a seasonal schedule.
Major Types of Equipment, Materials, Chemicals Used: General office equipment; surveying equipment; photo lab uses developing chemicals; has a fleet of company cars; uses various chemicals in an environmental lab.

Industry D

Location: Trinity County
Type of Industry: Acute Care Hospital
Number of Employees: 84-94
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Anesthetic and sterilizing gases; other flammable cleaning products; oxygen; operating room equipment; patient care equipment- beds, wheel chairs, guerneys; x-ray equipment; lab equipment and chemicals.

Industry E

Location: Shasta County
Type of Industry: National Forest Headquarters; U.S. Government
Number of Employees: 800
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Trucks, cars, caterpillar tractors, backhoes, graders; use various "research" chemicals, pesticides, and other hazardous and toxic chemicals.

Industry F

Location: Butte County
Type of Industry: Wholesale/Retail Food Stuffs Trade; Food Processor
Number of Employees: 400-800; more employees in the Fall months
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Fork lifts and trucks; shelling, sorting, cooking, slicing, packaging and canning equipment; fumigation materials and chemicals, such as chlorine; use welding equipment.

Industry G

Location: Glenn County
Type of Industry: Wholesale/Retail Food Trade
Number of Employees: 100-400
Operating Schedule: Year Round; more employees in Fall/early Winter.
Major Types of Equipment, Materials, Chemicals Used: Vehicles; nut hullers; sorting machines; cooking equipment; canning and packaging equipment; fumigation materials and chemicals.

Industry H

Location: Butte County
Type of Industry: Utilities Services
Number of Employees: 200
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Caustic chemicals; solvents, P.C.B.; radiation; microwaves; electricity and gas; motor vehicles.

Industry I

Location: Glenn County
Type of Industry: Manufacturing
Number of Employees: 160
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Shears; punch press; welding equipment; forklifts; glue.

Industry J

Location: Plumas County
Type of Industry: Lumber Mills
Number of Employees: 224
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Wood processing equipment such as saws, planer; fork lifts; conveyor belts and other equipment/loaders and unloaders; gasoline and diesel fuel.

Industry K

Location: Plumas County
Type of Industry: Forest Management (Federal Government)
Number of Employees: 550-900
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Heavy equipment (graters, tractors, backhoes, tree planters); trucks; chainsaws; fire fighting equipment (shovels, axes); chemicals (2-4-5-T, borate).

Industry L

Location: Lassen County
Type of Industry: Post secondary education (community college)
Number of Employees: 311
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Tractors; grinders; drills; welding torches; metals; automobiles; laser beam; various laboratory chemicals; gas.

Industry M

Location: Lassen County
Type of Industry: Education Administration
Number of Employees: 67
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Office equipment; school buses; automobiles; no chemicals.

Industry N

Location: Modoc County
Type of Industry: Forest Management (Federal Government)
Number of Employees: 211-250
Operating Schedule: Year Round (office personnel, year round; Forest workers, Summer and Fall).
Major Types of Equipment, Materials, Chemicals Used: Heavy equipment (CATs, tractors); surveying equipment; natural gas.

* Industry O

Location: * Modoc County
Type of Industry: Manufacturing
Number of Employees: 20
Operating Schedule: Seasonal: Late Spring, Summer and Fall.
Major Types of Equipment, Materials, Chemicals Used: Heavy equipment (trenchers, CATs, pipe pressors); welding equipment; glue; acetylene.

Industry P

Location: Siskiyou County
Type of Industry: Lumber mill (Manufacturing)
Number of Employees: 85
Operating Schedule: Year Round
Major Types of Equipment, Materials, Chemicals Used: Tractors; log handling and manufacturing equipment; welding equipment.

Industry Q

Location: Siskiyou
Type of Industry: Post Secondary Education (Community College)
Number of Employees: 236
Operating Schedule: Year Round (Fewer employees in Summer).
Major Types of Equipment, Materials, Chemicals Used: Office equipment; gasoline.

Industry R

Location: Shasta County
Type of Industry: Lumber Mill
Number of Employees: 300
Operating Schedule: Year Round for mill workers; seasonal for forest workers.
Major Types of Equipment, Materials, Chemicals Used: Heavy equipment (skidders, CATs, bulldozers, cranes); caustic salt; formaldehyde.

For Statistical Percentages

Number of Responding Industries= 18

Percents are based on a 100% scale:

18 out of 18 = 100%

17 out of 18 = 94%
16 out of 18 = 89%
15 out of 18 = 83%
14 out of 18 = 78%
13 out of 18 = 72%
12 out of 18 = 67%
11 out of 18 = 61%
10 out of 18 = 56%
9 out of 18 = 50%
8 out of 18 = 44%-(44.4)
7 out of 18 = 39%
6 out of 18 = 33%
5 out of 18 = 28%
4 out of 18 = 22%
3 out of 18 = 17%
2 out of 18 = 11%-(11.1)
1 out of 18 = 06%
0 out of 18 = 0%

RESPONSES TO INTERVIEW QUESTIONS

Industries Responding= 18

Have heard of NP/PAs:	Yes = 11	(61%)
	No = 7	(39%)

1.,2.,3. are summarized in section titled "Descriptions of Participating Industries."

4A. New employee safety program:	Yes = 9	(50%)
	No = 9	(50%)
*B. Safety program needed:	Yes = 6	(33%)
	No = 9	(50%)
5A. Employee health care provided:	Yes = 18	(100%)
	No = 0	
B. Employee health care provisions, and provider of health care:		
--workers' compensation claims:	Yes = 18	(100%)
	No = 0	
Done by: M.D. :	Yes = 18	(100%)
NP/PA:	Yes = 0	
** --preplacement physical examinations:	Yes = 12	(67%)
	No = 6	(33%)
Done by: M.D. :	Yes = 12	(100%)
NP/PA:	Yes = 0	
***--periodic physical examination:	Yes = 5	(28%)
	No = 13	(72%)
Done by: M.D. :	Yes = 4	
NP/PA:	Yes = 0	
RN:	Yes = 1	

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* Some interviewers did not ask Part B to question 4 if the respondent answered YES, to having a new employee safety program. Some respondents answered YES to both parts (A. and B.).
** Some industries require new employees to have a preplacement physical examination, but do not cover the expenses of the examination. Responses indicate requirement.
***In one case, the examination consisted of blood work and testing for T.B.

Industries Interviewed= 18

5B. continued

* --accident/injury care:	Yes = 15	(83%)
	No = 3	(17%)
Done by:		
M.D. :	Yes = 17	
Industry First Aid Worker :	Yes = 1	
--illness care:	Yes = 7	(39%)
	No = 11	(61%)
Done by:		
M.D. :	Yes = 5	(71%)
*Combination of MDs and NP/PAs:	Yes = 2	(29%)
--other provisions:	Yes = 4	

included epidemic illness coverage (provided by an infectious disease control R.N.); periodic urinalysis for employees handling toxic substances.

5C. Health-related classes for employees:	Yes = 10	(56%)
	No = 8	(44%)

Class offerings included: cardiopulmonary resuscitation, stop smoking, weight control, exercise, safety, alcohol and drug abuse, first aid, body mechanics, stress reduction. The majority of health classes consisted of CPR and/or First Aid.

Classes held:	
On-site:	Yes = 4
Off-site:	Yes = 2
Combination:	Yes = 4

5D. Medical care easily accessible: (3 out of 18 industries did not respond to this question)	Yes = 14/15	(93%)
	No = 1/15	(7%)
6. Health providers working arrangements with the industries:		
MD contract:	Yes = 3	(17%)
	No = 15	(83%)

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* This provision may have been construed to mean the same as provisions (by the industry) for workers' compensation claims. However, a broader application was intended (off-site and/or off-duty accident and injury coverage). While 15 industries responded "yes" to providing accident/injury benefits, 17 industries indicated employees received care from M.D.s, and 1 industry has a first aid-trained person evaluate injured employees, then, if necessary refers to M.D.

Industries Interviewed= 18

6.	continued			
	NP/PA contract:	Yes =	0	
		No =	18	(100%)
	No working arrangements: (MD, NP/PA)	total=	16	(89%)
7.	Potential health and safety risks:	Yes =	17	(94%)
		No =	1	
8A.	Illnesses or accidents related to health and safety risks:	Yes =	5	(28%)
		No =	13	(72%)
B.	Procedure followed for on-the-job illness or accident; employee initially seen by:			
	R.N.:	Yes =	2	(11%)
	M.D.:	Yes =	14	(78%)
	M.D. or NP/PA:	Yes =	1	(6%)-5.9%
	None of above:	Yes =	1	-------5.9%
	Sent to Emergency Room from the industry for:			
	perceived emergencies:	Yes =	11	(61%)
	non-emergencies:	Yes =	3	(17%)
	not sent to an Emergency Room:	Yes =	4	(22%)
9A.	Respondents aware of own industry's illness and accident rates:	Yes =	6	(33%)
		No =	12	(67%)
B.	Are statistics available?	Yes =	10	(56%)
		No =	8	(44%)
C.	Can anything be done to change your illness and/or accident rates?	Yes =	8	(44%)
		No =	9	(50%)
		Unsure=	1	(6%)

Ideas that could be developed to help change (improve) illness and accident rates included: more employee inservice classes, develop a safety committee, develop an employee health program, develop an employee safety program, develop a class on proper lifting techniques, purchase automated equipment.

Industries Interviewed= 18

10. In general, considers employees healthy: Yes = 18 (100%)
No = 0

Indications of a healthy work force included: low absenteeism, low illness and accident rates, employees productivity level is good, personal observation.

11. What could be done to increase your employees' productivity? Responses included the following:

encourage employees to exercise
practice good nutrition and stop smoking
hold meetings and discuss job efficiency and methods to streamline procedures
encourage work force rest periods
create and/or expand a positive reward system
offer financial incentives
provide an accident-free, safe environment
develop a detailed training program
offer employees regular eye examinations
develop better methods for employee selection
require pre-placement physical examinations
offer stress workshops
develop methods for reviewing the labor force
improve management/work force relationships

12A. Industry is paying too much for health care: Yes = 9 (50%)
* No = 8 (44%)
No opinion = 1 (6%)

B. Highest costs occur in:

--health insurance premiums:	Yes = 7	
--claims for workers' compensation:	Yes = 2	TOTAL INDUSTRIES RESPONDING= 8
--physicians fees:	Yes = 5	
--NP/PA fees:	none	NO RESPONSE FROM THE 18 INDUSTRIES
--unknown:	Yes = 2	
		TOTAL INDUSTRIES RESPONDING=10
--satisfied with all costs:	Yes = 8	

* Put in the "no response was one respondent who felt that his industry was not spending enough on health care.

Industries Interviewed= 18

13. Concerns of industry relative to employees:

--number of workers' compensation claims: Yes = 3

--number of lost work days: Yes = 2

--low employee morale: Yes = 2

--personal problems of employees: Yes = 11

--decreased productivity: Yes = 4

--high accident rates: Yes = 1

--high illness rates: Yes = 1

Other: found employees take too many risks, disregard safety rules. (1 industry)

--no concerns: Yes = 4

14A. Problems affecting employee productivity:

--alcoholism: Yes = 6

--drug abuse: Yes = 4

(Industries with concerns=12.)

--family/marital problems: Yes = 8

--financial problems: Yes = 9

--none of the above problems are affecting productivity: Yes = 6

b. How the 12 industries are dealing with the employee problems:
3 of the industries do not have methods for dealing with the problems;
4 of the industries either send employees for "outside" counseling or have in-house programs, such as an alcohol/drug abuse program;
5 industries have specific programs to deal with major concerns.

Of the 6 industries who responded there were no problems affecting employee productivity, 5 had no programs relative to concerns in question 14A, and 1 industry has a "concern project" that may be acting to prevent employee problems from becoming deterrents to productivity.

Industries Interviewed= 18

15. Health care needs of employees are being met:

Yes = 12

Yes, in some areas = 4

No = 2

The 4 industries indicating part of employee health care needs are being met indicated a need for: health maintenance care, preventive health care, stress reduction education, vision care.

One industry responding "no" to the above question, said that "our national survey said we did outstanding in safety, but needed to work on health needs." The other industry responding "no", said the industry made no provisions for employee health care.

Interview Closure:

Would you consider developing an employee health care program?

Yes = 8	(44%)	44.1	
No = 8	(44%)	44.1	= 99.9%
"Already have program" = 2	(11%)	11.1	= 100%

Would consider utilizing NP/PAs to provide employee health care services:

*Yes = 11	(61%)	
No = 0		
Unsure = 1	(6%)	
No response = 6	(33%)	
**NP = 2		
**PA = 0		
**Either NP or PA = 9		

Comments:

* Included in the "yes" response was one industry that responded: "Yes, maybe."

** Preferences for utilizing either an NP or PA were not part of the interview. Rather, these distinct categories were added to tabulated responses because some industries did indicate a preference.